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Forest Service

Boise National
Forest

Boise National Forest
FOREST PLAN
Monitoring Evaluation Report
(Samples of Key Monitoring Results)

This Report Contains Samples of Monitoring Results from Forest Plan Implementation in 1990, 1991, and 1992 with conclusions and ID Team recommendations on key monitoring questions.

The Code of Federal Regulations 36 CFR 219.12 (K) states that Forest Plan implementation "should be evaluated on a sample basis to determine how well objectives have been met and how closely management standards and guidelines have been applied. Based upon this evaluation, the Interdisciplinary Team shall recommend to the Forest Supervisor such changes in management direction, revisions, or amendment to the Forest Plan as deemed necessary."

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Introduction

Implementation

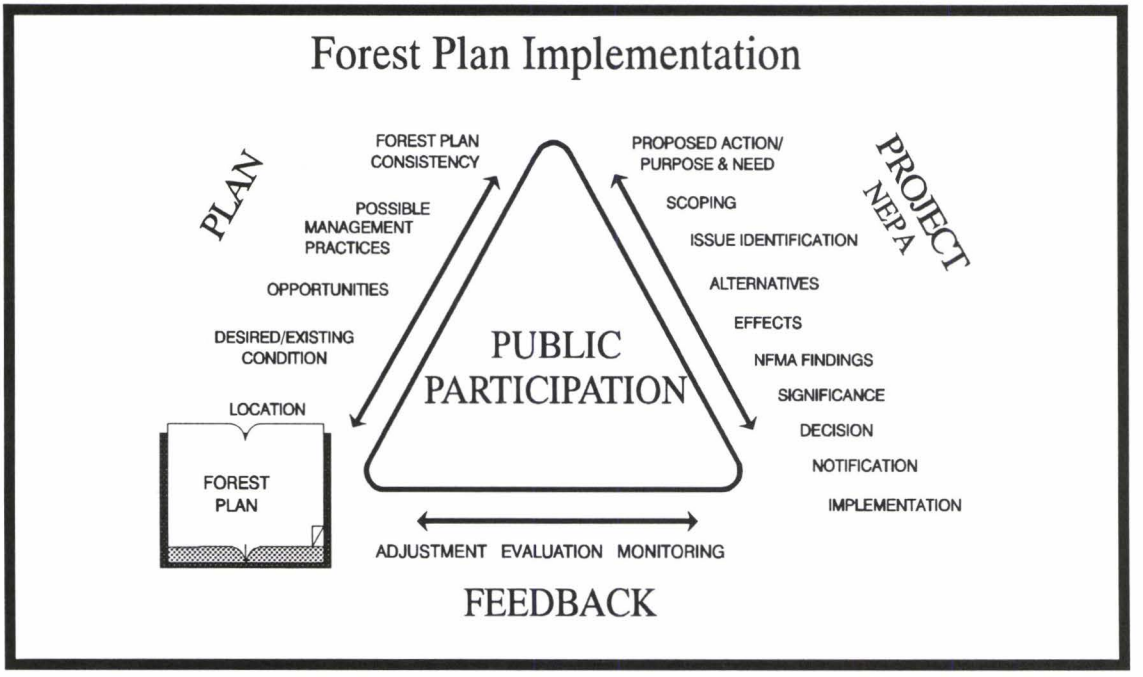
Monitoring and Evaluation Report

Focused Monitoring

INTRODUCTION

Implementation

Monitoring and Evaluation (M/E) are critical elements of Forest Plan implementation. M/E links implementation of management practices (projects) with original Forest Plan estimates of effects. Where differences occur, there may be a need to "change" or amend management direction or outputs in the Plan.



As illustrated above, M/E occurs after the project analysis/decision (NEPA) process is completed and the project is implemented. Adjustments (changes) as a result of M/E can include amendments to the Forest Plan, supplements to project NEPA documents, or modification of or even abandonment of projects. M/E is also a quality check, a method for measuring quality conformance. In addition, we use M/E to validate and improve our decision making for future plans and projects and to keep our Forest Plan viable.

Monitoring and Evaluation Report

The personnel of the Boise National Forest recognize the importance of reporting on the monitoring that is taking place on the Forest and making available a documentation of the results.

Rather than attempting to report on all aspects of monitoring projects on the Forest, this report is a documentation of monitoring and evaluation on key questions and monitoring methods presently being focussed. Federal regulations call for an interdisciplinary team (IDT) to recommend to the Forest Supervisor needs for change in the Forest Plan based on how well objectives in the plan have been met and how closely management standards and guidelines have been applied. In this report you will find samples of monitoring methods, analysis, monitoring results, and ID Team recommendations to the Forest Supervisor.

Periodically, we will provide a summary of monitoring and evaluation results as critical Plan implementation questions arise. A summary of monitoring reports, projects and results will be compiled in a 5 year report in 1995.

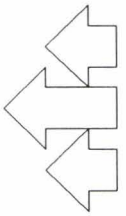
Focused Monitoring

Focused monitoring is that which focuses on specific questions related to possible adjustments needed in our forest plan implementation.

The Forest is presently focusing its monitoring and evaluation on three major areas of implementation adjustment that could possibly trigger a "need for change." These possible adjustments include, 1) ASQ, effects of increased mortality as a result of catastrophic insect attack and fire; 2) Forest Health, adequacy of the management direction, goals, standards and guides of our Forest Plan to deal with the forest health initiative of salvage, thin and prescribe burn; 3) Water Quality, such as meeting sediment constraints on timber harvest established in the Plan.

"BIG THREE" ADJUSTMENTS (Possible Need For Change)

ASQ



FIRE

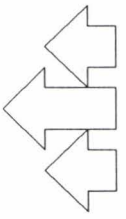
(Allowable Sale Quanity)

INSECTS

* Salavage volume not captured/harvested.

* Difference in "normal" mortality as analyzed in the FORPLAN model for the Forest Plan and present mortality as a result of catastrophic fire and insect attack.

FOREST HEALTH



STAND RESILIENCE

ECOSYSTEM

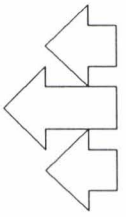
MANAGEMENT

* Evenage vs. unevenage management.

* Historic range of variability.

* Scope of management effects.

WATER QUALITY



T/E CHINOOK SALMON

SEDIMENT

*Sensitive Species/Prevent from becoming threatened.

* Need for no effect management/sediment.

* Unaccpetable change

* Biological evaluations

Need for Change

Monitoring Items

ASQ/Insect and Fire Mortality

Forest Health

Water Quality

"We need to ensure that we are successfully doing what we set out to do. The key to keeping our forest plans meaningful and up to date is monitoring and evaluation."

F. Dale Robertson: Former Chief of the Forest Service, from the Chief's message in the National Monitoring and Evaluation Strategy Report; January 93.

MONITORING ITEM:
ASQ/Insect and Fire Mortality on the Boise NF

MONITORING QUESTION

Has timber volume losses, as a result of recent catastrophic insect attacks and fire events, significantly reduced the yield capability of existing stands and affect future harvest potential on suited forest land of the Boise National Forest?

Background

The recent six year drought in Idaho has contributed to the vulnerability of the timbered lands on the Boise Forest to insect attack and fire. The catastrophic events experienced in the first three years of the planning decade 1990-1992 may have an impact on the management activities, particularly silvicultural treatments, that the Forest can employ over the later part of the decade. In particular, the amount of volume lost to insects and fire in 1988 - 1992 could affect the overall forest harvest capability, ASQ as expressed in the Forest Plan.

Evaluation/Summary

Evaluation of the ASQ monitoring has revealed that the total timber inventory estimated to be lost (not captured in harvest) to bugs on suited land, is approximately 162 million board feet(MMbf). In addition a relatively small amount of suited land was involved in the recent large fires. For example, 20,000 acres of the 256,000 acres burned in the Foothills fire was suited forest land.

Suited Forest Lands (from which ASQ is calculated)

These are lands allocated to timber management as a result of a three-stage suitability analysis. Stage I identifies the biologically capable, administratively available, and technically suited land. Stage II consists of an economic analysis of cost and benefits of timber management on the lands identified is Stage I. Stage III provides the final allocation of suitable lands based on Forest Plan objectives and economic efficiency. Stage II and III are completed using the FORPLAN model. The Boise National Forest has a suited forest land base of 656,000 acres.

Since the implementation of the Forest Plan, approximately 151 MMbf of timber has burned on suited forest land. We have captured (salvaged logged) 96.9 MMbf of the burned volume resulting in a loss of approximately 55 MMbf (see page II-5 & 6 for a more detailed breakdown of this volume).

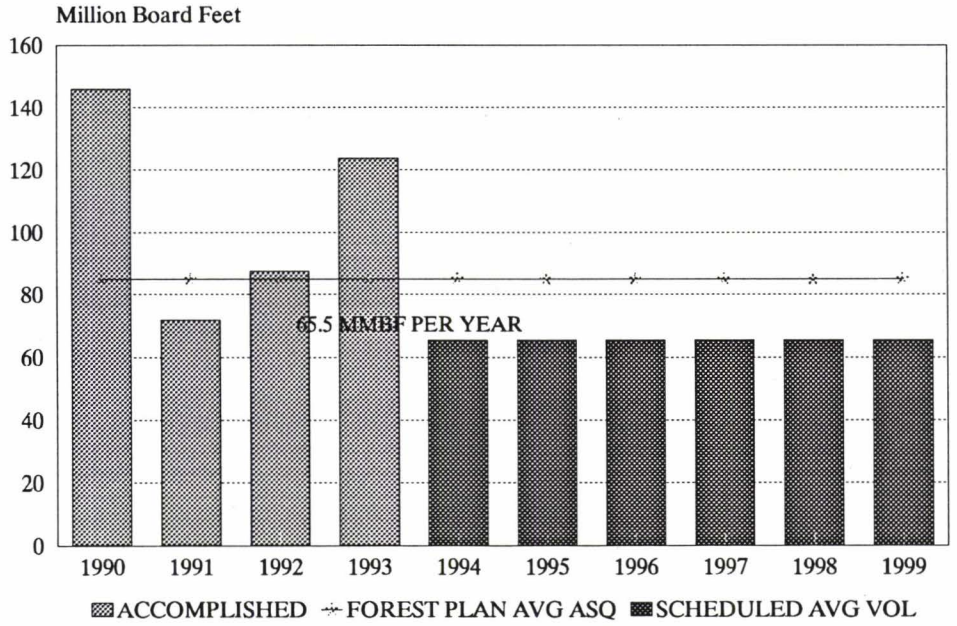
The total timber inventory (growth) for the Boise Forest, estimated by the FORPLAN model in 1989, is approximately 6,000 MMbf. Therefore, a loss of 217 MMbf (162 bugs + 55 fire) represents less than a 4% loss of the inventory on suited lands. Forest Plan calculations include an accuracy of no better than ± 10%. An on the ground inventory will be conducted in 1995 to check the accuracy of the results of this analysis.

Conclusion

The loss of timber volume to bugs and fire on suited land though it appears to be significant in some management areas, is not significant in terms of effect on the forest-wide ASQ. A loss of 217 MMbf, or less than 4% of the suited land growth, does not significantly reduce the yield capability or future timber harvest potential of the suited forest land when production capability of the entire forest is considered. However, some individual management areas obviously need a change in management direction. Plus, the average ASQ offering, for the remaining 6 years of the planning period, will not be able to exceed approximately 65.5 MMbf/year (see ID Team Recommendations, page II-10 & 11).

Planned ASQ Harvest: The following graph shows ASQ harvest for the first four years of the plan and the approximate average volume that can be offered for the remainder of the planning period.

BOISE NATIONAL FOREST
ASQ VOLUME



90-92 ASQ ACCOMP, 93-99 SCHEDULED

Analysis Methods

A Forest interdisciplinary team (IDT) in conjunction with entomologist from the Forest Pest Management group located at the Boise National Forest Supervisors office capitalized upon existing information and utilized the Geographic Information Systems (GIS) to map and analyze the extent of timber volume loss as a result of insect attack and recent major fires.

Insects

Insects, specifically bark beetles and tussock moth, present a complex challenge to determine their effect on timber mortality. Beetles are assumed to be "killer bugs", their presence in whatever degree results in tree mortality. The tussock moth, on the other hand, is considered a "killer" only in areas where the intensity of defoliation is recorded as high at any point in time on a low-moderate-high continuum established by the Forest Pest Management group.

The IDT developed a procedure to establish the volume losses from both inside salvage sale areas and outside sale areas. There was an obvious loss of volume on suited land outside the areas salvaged. However, the monitoring also revealed that there was a loss of volume inside salvage sale areas due to the cull factor associated with the time lapse between tree mortality and salvage harvest.

The following table displays a summary of volume loss on suited land both inside sale areas and on suited land not salvage harvested.

(INSECTS)	Volume Lost Outside Sales Areas	Volume Lost Inside Sale Areas	Suited Land Total
Beetle-killed Volume	35,500 MBF	4,600 MBF	40,100 MBF
Tussock Moth Mortality	76,700 MBF	44,900 MBF	121,600 MBF
Totals:	112,200 MBF	49,500 MBF	161,700 MBF

Note: A complete analysis document of the monitoring process to establish these volumes is available upon request at the Boise National Forest Supervisors Office. Ask for the ASQ Analysis/Insect and Fire Mortality on the Boise National Forest, 1993.

Fire

The monitoring of the effects of fire on suited forest land are based on the timber strata (type of timber present) timber strata acres, maximum volume per acre the strata produces, minus the volume captured (salvaged). This volume is displayed by management area in the following table.

Volume Lost on Suited Land of the Major Fire Areas

Fire Name	Mgt Area	Strata	Strata Acres	Max Vol/AC MBF/AC	Total Vol. MMBF	Percent Cap.	Vol. Cap. MMBF	Vol. Not Cap. MMBF
Foothills	#4	9	22	9	0.2	0	0	0.2
Foothills	#6 (Unsuited Land Only)							
Foothills	#5	2	3593	3.7	13.3	90	12	1.3
		9	4632	9.9	45.9	70	32.1	13.7
		8	5827	8.8	51.3	60	30.8	20.5
		11	2075	4.5	9.3	70	6.5	2.8
		10	279	4	1.1	60	0.7	0.4
		WW	1583	5.5	8.7	50	4.4	4.4
Foothills	#15 (unsuited Land Only)							
Foothills	#16	8	667	8	5.3	60	3.2	2.1
		11	389	4.5	1.8	60	1.1	0.7
		1	7	0	0	0	0	0
		2	212	3	0.6	90	0.6	0.1
		10	23	4	0.1	60	0.1	0
County Line	#30 (No Loss on Suited Acres)							
County Line	#38	07/09	45	9.9	0.4	5	0	0.4
Cub Creek	#37	9	35	9.9	0.3	60	0.2	0.1
Cub Creek	#38	02/03	69	3.7	0.3	80	0.2	0.1
Cub Creek	#38	07/09	679	9.9	6.7	70	4.7	2
Dunnigan	#16	06/08	19	8.8	0.2	0	0	0.2
		07/09	561	9.9	5.6	0	0	5.6
Totals			**20,717**		**151.1**		**96.6**	**54.5**

Summary Table Suited Land

FIRE	Volume Lost
Foothills	46,300 MBF
County Line	400 MBF
Cub Creek	2,200 MBF
Dunnigan	5,800 MBF
Totals	**54,700 MBF**

It is important to note that when the yield tables for the capability zones on the Forest were built, "normal mortality" was a factor in building these tables based on the timber inventories. Mortality as a result of the insect and fire events compared with what is considered "normal" is displayed for both inside and outside salvage sales in the following table.

Insect and Fire Mortality Inside and Outside Salvage Sale Areas and Normal Mortality by Capability zones in Board Feet Per Acre *

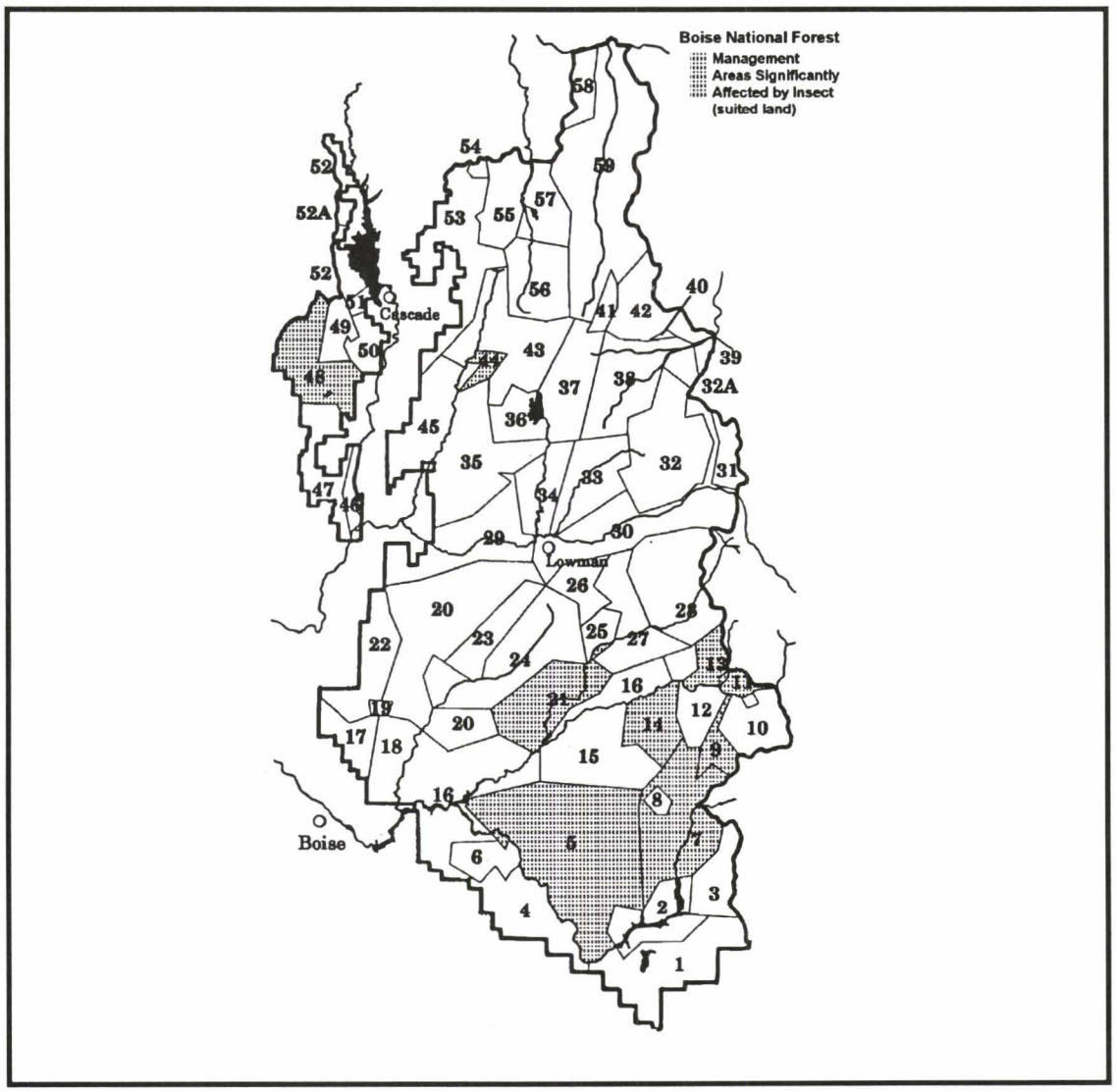
Cap. Zone	Outside Mort.	Normal Mort.	Inside Mort.	Normal Mort
1	2.7	736	1	736
2	89.7	96.5	94.7	96.5
3	416	165.5	208.6	165.5
4	91.4	70.9	80.8	70.9
5	39.2	103.8	4.1	103.8
6	2.8	39.3	27.3	39.3
7	66.9	36.5	5.2	36.5
8	134.4	34.1	0	34.1
9	40.1	91.6	5.1	91.6
10	47.4	69.3	1.1	69.3
11	30.1	51.2	0	51.2
12	84.9	57.8	61.8	57.8
13	298.4	48.8	25.8	48.8
14	161.6	46.7	63.1	46
15	39.2	184.5	0	184.5
16	0.1	67.6	0	67.6
17	0	11.2	0	11.2
416	= Mortality greater than normal			

*** Data on normal and existing mortality will be updated by an integrated inventory scheduled for 1995.**

The mortality comparison displayed in the previous table shows capability zones 3,4,7,8,12,13 and 14 experienced greater mortality than that which was accounted for in the development of the yield tables. Volume losses outside sale areas that were greater than normal, range from a low of 27.1 board feet per acre in capability zone 12 to a high of 250.5 board feet per acre in capability zone 3. Losses inside sale areas (not captured) range from a low of 4 board feet per acre in Capability Zone 12 to a high of 43.1 board feet per acre in Capability Zone 3.

Management Areas

The next step was to overlay these capability zones on Forest Plan management areas to determine loss by management area. The following tables are the results of this comparison.



Volume Loss to Insects/Board Feet Per Acre

Mgt. Area	Total Acres	Nat. Forest Acres	Suitable Acres	Beetles Lost Volume	Tussock Moth Lost Volume	Total
2	48559.00	24753.00	3800.00	15	27	42
3	29604.00	27610.00	12010.00	9		9
5	142684.00	92741.00	31700.00	7	357	364
7	89942.00	77762.00	55220.00	9	500	509
9	19431.00	18972.00	11660.00	112	113	124
11	12148.00	11089.00	7200.00	10	1035	1045
13	19769.00	19769.00	6040.00	24	220	244
14	48415.00	48055.00	31350.00	27	561	588
16	112519.00	95210.00	16620.00	2	18	20
17	16028.00	6317.00	1540.00	5		5
18	36526.00	14775.00	11010.00	32		32
19	7620.00	6985.00	1040.00	7		7
20	144374.00	81138.00	57670.00	20	16	36
21	60538.00	59825.00	38550.00	10	243	253
22	31059.00	14932.00	10195.00	20		20
23	20568.00	9467.00	7900.00	9		9
24	78415.00	59545.00	43660.00	33		33
25	10745.00	10745.00	10310.00	11		11
26	23561.00	23229.00	21190.00	1		1
27	43777.00	42696.00	37540.00	7	28	35
29	69691.00	66333.00	37920.00	10		10
30	95163.00	939959.0	60560.00	3		3
31	14194.00	14194.00	4400.00			
33	31126.00	31073.00	20370.00	31		31
34	30721.00	30573.00	13820.00	40		40
35	76278.00	74984.00	5300.00	53		53
36	25538.00	25538.00	17180.00	21		21
37	53323.00	53075.00	46861.00	19		19
39	5119.00	5119.00	2580.00			
40	2282.00	2282.00	1590.00			
41	16435.00	16255.00	7930.00			
44	10860.00	10860.00	8520.00	37		37
45	52907.00	52157.00	46960.00	55		55
46	11797.00	11391.00	9060.00	207		207
47	36421.00	33738.00	24130.00	30	18	48
48	48241.00	46315.00	35510.00	54	617	671
50	15294.00	14911.00	11190.00	34		34
51	3078.00	2717.00	1550.00	26		26
52	22961.00	21861.00	14770.00	7		7
53	80916.00	67637.00	56200.00	20		20

ID Team Recommendation

The ID Team does not see a need to amend the Forest Plan immediately as a result of the additional mortality from the recent catastrophic insect attacks and fire events. However, increased mortality and the tremendous increase of acres burned outside the suited forest land componant are indicators of forest health problems. It is critical that a reanalysis of the appropriate ASQ and suited land on the Boise Forest take place as soon as new integrated inventory data is available. Management areas hardest hit by insects or fire and in some cases both, such as Management Area 5 will need adjusted management direction to include goals, objectives and management standards.

The Team recommends that the present proposed schedule of harvest for the remaining six years in the planning decade be adjusted to be within the noninterchangeable harvest components. Under the present proposed harvest schedule, (see the following page) the volume in NIC[1], 762 MMbf exceeds the 740 MMbf volume allowed in the Plan alternative.

The ASQ as stated in the Record of Decision of the Forest Plan is "set at 850 MMbf (million board feet) for the decade on a suited timber base of 656,000 acres." The ASQ ceiling could hinder efforts to treat the large number of acres which need treatment due to our forest health concerns.

The 850 MMbf is comprised of four noninterchangeable components. "If timber volume in one component is not sold, timber volume from another component may not be substituted for it in order to bring the total volume sold up to the total ASQ."

The noninterchangeable components are:

- Base sale program of 740 MMbf.
- South Fork of the Salmon River volume of 25 MMbf.
- A whitewoods component of 65 MMbf, consisting primarily of lodgepole pine and subalpine fir species.
- Peace Rock roadless area volume of 20 MMbf, using only aerial logging systems, and silvicultural systems that achieve an uneven-age stand structure.

"In addition, the ASQ is divided into two categories, that volume scheduled from inventoried roadless areas and that volume located elsewhere on the Forest. If timber volume scheduled from an inventoried roadless area cannot be sold, that volume will not be replaced by volume outside those areas. Volume scheduled from inventoried roadless areas is estimated to be 200 MMbf or 24% of the ASQ" (ROD p. R-11).

The following table shows an adjusted timber offering as is now proposed. Further adjustments are planned to occur on a yearly basis. In this proposal approximately 33.5 MMbf of the whitewoods component would not be offered. The table also shows 10.9 MMbf of timber that was analyzed for harvest as a result of the Warm Lake Complex Fire Recovery Project. The alternative to harvest this volume was not selected. A portion of the 25 MMbf component of the South Fork of the Salmon River is not yet scheduled.

TEN-YEAR TIMBER OFFERING
Boise National Forest
Status Date 2/01/93
(90' - 93' Actual Offering - 94' - 99' Proposed)

YR	NIC 1 Roaded ASQ	NIC 1 Rdless ASQ	NIC 2 Roaded White Woods	NIC 2 Rdless White Woods	NIC 3 Roaded SFSR	NIC 3 Rdless Peace Rock	NIC 4 Rdless Peace Rock	Total ASQ	Green ASQ	Salvage ASQ	Non ASQ	Total PSTP
90	112	34	0	0	0	(10.9)*		146	9	137	13	159
91	67	5	0	0	0			72	50	22	10	82
92	54	33	0	0	0			87	2	85	9	96
93	89	31	4	0	0			124	0	124	51	175
94	36	22	5	3	0			66	46	20	0	66
95	65	0	1	0	0			65	57	9	0	66
96	42	6	2	2	0		20	72	62	10	0	72
97	46	14	5	3	0			68	55	13	0	68
98	49	1	2	2	8			62	56	6	0	62
99	55	1	5	0	4			65	59	6	0	65
Total	615	147	24	10	12	(10.9)*	20	828	396	432	83	911

Volume from Suited Land/MMbf
* Analyzed for harest as a result of the Warm Lake Complex Fire Recovery Project - not offered.

MONITORING ITEM
Forest Health

MONITORING QUESTION

Is the present Forest Health Initiative of salvage, thin and prescribe burn within the management direction of the Forest Plan?

Background

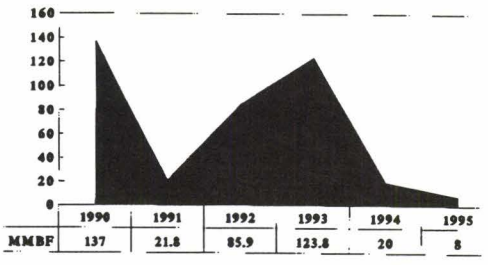
"It is imperative that we, as leaders of this Forest, learn about forest resilience and restoration of ecosystems and their management to implement the Chief's direction — 'Management will be ecosystem based.' We need to lead this Forest into ecosystem management by using the concept of restoring forest resilience" (Mealey, 1993).

There are at least three stand treatments that are essential in restoring stand resilience, 1) salvage harvest, 2) thin, and 3) prescribe burn. The following briefly describes each treatment strategy.

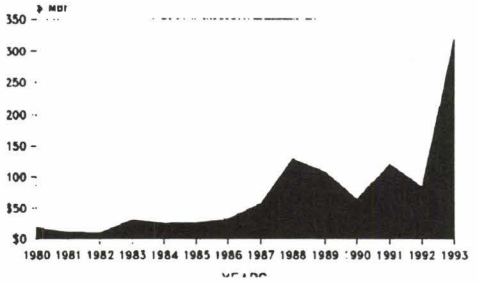
Salvage Harvest: We have now completed much of treatment number one: salvaging dead and dying trees form the lands suitable for commercial timber harvest to recover their economic value and utilize stumpage funds to replant where appropriate. For various reasons the timber values have proven to be substantial. Salvage harvest includes trees that have been killed by insects and fire.

Boise National Forest

Salvage Sale Volume



Timber Bid Averages



Thin: This treatment is to manage forest stand density. In many stands throughout the Forest we need to reduce the number of trees competing for water and convert stands to a more "historic range of variability." A management strategy for "resilience," or

the ability to recover from or adjust easily to environmental changes such as drought, is being considered as an alternative in all applicable timber sale units on the Boise National Forest.

Prescribe Fire: To achieve resilient stand conditions, recent studies have shown that it is necessary to manage both the overstory and understory vegetation by using a combination of partial cuttings and prescribed fire. "We should be attempting to simulate historical fire frequencies by repeating understory fires every 10 to 25 years. Repeat understory fires are needed to control unwanted dense fir regeneration and to prevent accumulations of fuel that could support intense wildfires."[1] We know that fire is not a tool to be used on all sites or in all situations. However, it is a very useful and necessary tool that should be available, understood and used where appropriate.

Evaluation/Summary

Harvest Strategy/Thin: Under the strategy of developing a fire-adapted ecosystem, many lower elevation seral ponderosa pine stands need to be managed for considerably lower tree densities and less coniferous understory than what currently exist. Stand density should be varied dependent upon site productivity. Clumps of trees with dense understory will be a part of the stand makeup but should be found scattered throughout relatively open stands. Timber harvest prescriptions should change from an emphasis on even age two entry harvest prescriptions with a focus on optimum regeneration and present net value (PNV) to a stand resilience prescription. Stand resilience prescriptions will most likely entail more than two entries during the rotation, with a light harvest in each entry.

Prescribed Fire: For more resilient and healthy ponderosa pine forests, we must control stocking density and species composition on a landscape scale through an integration of silviculture and fire prescriptions. Traditional seed tree and shelterwood harvest systems will continue to be appropriate for securing regeneration in some situations. However, long-term goals should include maintaining a continuous, open overstory of health seral pine and larch through innovative forestry systems involving retention shelterwood, single tree selection, and group selection systems in conjunction with periodic underburning.[1]

We have been through an era that started in the early 1900's where our management included an attempt to exclude fire from our forests. "The complex ecological role of fire generally was not recognized, and many educated people considered fire to be a scourge introduced by human negligence."[1] Reintroduction of fire (broadcast burning, underburning, prescribed natural fire, and stand replacement fire) in a

landscape-sized effort, will change the appearance of the forest. There will be times when air quality will be effected and large charred areas will be apparent. It will take a special commitment from all to gain public understanding and support.

Conclusion

Our Forest Plan has proven to be clear and adequate in its management direction as we deal with the issues of forest health. The present management practices of salvage, thin and prescribe burn all serve the goals of management as stated in our Plan. These management practices are necessary in many management areas to change the existing conditions to desired future conditions.

Analysis Methods

Forest Plan Direction/Insects, Pests, and Disease:

Desired Future Condition: "Dynamic influences of insects and disease do not prevent the achievement of management objectives. Forest vegetation is manipulated to increase tree vigor, and their susceptibility to insects and diseases is very low. All aspects of a pest-host system are monitored and evaluated to provide information for decision-making and pest control actions. Integrated Pest Management (IPM), a balance approach to pest management that consider silvicultural, biological, and/or chemical control measures is routinely used on suited timber lands to protect resource values considering resource management objectives, and environmental and economic factors" (Boise Forest Plan, page IV-63).

Forest Plan Goals: (Boise Forest Plan, page IV-63)

- Incorporate, into site-specific management, appropriate Integrated Pest Management (IPM) strategies to maintain or enhance forest health by mitigating damaging effects of potential pest.
- Reduce the risk of insect attack on second-growth stands by managing stand density.
- Risk-rate the acres suited for timber production for insect attack potential, and adjust silviculture treatments accordingly to achieve scheduled plan outputs.
- Manage dwarf mistletoe in lands suited for timber production.
- Establish an information program to educate the public on dynamic effects of wildfires, insects and diseases, and noxious weeds on the forest environment.

Forest Plan Direction/Prescribed Fire

Desired Future Condition: "Prescribed fire is routinely used to improve or maintain wildlife habitat, livestock range, site preparation for reforestation, and to reduce the risk of wildfire associated with logging slash and natural forest fuel accumulations (downed woody materials)" (Boise Forest Plan p.IV-65).

Goal: Identify opportunities and provide the necessary skills for the use of prescribed fire, to protect, improve, and maintain Forest resources."

ID Team Recommendation

The ID Team recommends that the Boise Forest continue with the strategy of salvage, thin and prescribe burn where appropriate on suited forest lands, but also expand the analysis of the needs for forest health management to the unsuited land component. The program of harvest as scheduled in the revised ten year plan (page II-11) will not require a forest plan amendment as long as the offerings stay within the noninterchangeable components of the Plan. However, many of the stands on the Boise forest are in "sad shape" and need treatment to improve the health of the stands. Forest health is a condition of forest ecosystems that sustains their complexity while providing for human needs. It has become clear that many of our timber stands fail the test. Many scientists and land managers agree that without treatment in the next 10-20 years there is a great danger that the forest legacy in the next century will become one of large, uniform landscapes, recovering from wildfire epidemics and other ecosystem setbacks.

For future management, it is important to determine how much area on the Forest is at high risk of a stand replacement fire or other catastrophic events. Then through risk rating determine how many, both suited and non-suited acres, need treated. If the high risk area is large and forest health resilience prescriptions require the treatment of more acres than is presently planed, a new look at ASQ would be appropriate.

[1] Mutch, Robert W.; Arno, Stephen F.; Brown, James K; Carlson, Clinton E.; Ottmar, Roger D.; Peterson, Janice L. 1992. Forest health in the Blue Mountains: A management strategy for fire-adapted ecosystems. General Tech. Rep. PNW-GTR-xxx. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. (Quigley, Thomas M., ed; Forest Health in the Blue Mountains: Science perspectives.)

MONITORING ITEM:
Water Quality

MONITORING QUESTION

Are actual timber harvest methods and associated sediment production within the sediment constraints used in FORPLAN when the effects of logging activity were analyzed for the current Forest Plan?

Background

One method of estimating the amount of sediment produced from timber harvest activities is to compare anticipated logging methods with those actually implemented on the ground in the first three years of Plan implementation. Watershed research has told us that tractor/jammer logging produces the most sediment, skyline logging produces less and helicopter logging produces the least sediment. Insect, disease and fire losses have been higher than originally anticipated and in order to quickly recover the lumber value, helicopter logging became the timber harvest method of choice. Sediment produced as a result of the change of timber harvest methods is now being recalculated and the Plan is being reviewed for differences.

Evaluation/Summary

The FEIS for our Forest Plan anticipated the following breakdown of logging methods for implementing proposed timber harvest: Tractor/jammer = 69%; Skyline = 18% and helicopter = 13%. This equated to an estimated 2,009 tons of sediment produced each year.

Actual logging systems utilized in 1990, 1991, and 1992 were: Tractor/jammer at 23%; Skyline at 4 % and helicopter at 73%. This equates to a yearly sediment estimate of 1,738 tons. A realistic look at future harvest methods could reduce the yearly sediment produced to less than 1,600 tons per year.

Conclusion

The sediment analysis indicates that with the exception of areas heavily impacted by intense wildfire, overall current timber harvest activities are estimated to be well below constraints originally modeled in Forest Plan analysis. It appears that the

effects of our present and anticipated harvest methods will total far less sediment than was predicted in the FORPLAN model. However, the effects of the concentrated salvage and the large fire events were not predicted.

It is anticipated that a refined BOISED &R1/R4 FISH RESPONSE MODELS (used to predict sediment production and fish effects) may indicate that the sediment production allowance resulting from timber harvest needs to be reduced to afford an adequate level of protection to existing water related values for lakes, rivers and streams (third - order or larger). Monitoring information is being collected this field season to check the accuracy of these models.

Analysis Methods

Logging Systems and Forest Plan Sediment Constraints

The FEIS of our Forest Plan analyzed an anticipated breakdown of timber harvest means consisting of 69% Tractor/Jammer; 18% Skyline: and 13% Helicopter. FORPLAN outputs shows 20,090 tons of sediment resulting from these anticipated harvest means and the roads associated with these harvest systems in the first decade or 2,009 T/YR. (does not include S. Fk. Salmon River drainage).

Sediment, as a result of the planned harvest methods over the decade, is broken out as follows:

T/J - 4281 TONS
Sky - 1422 TONS
Heli - 819 TONS
Roads - 13,568 TONS

Total 20,090 TONS

Considering that sediment is generally associated with T/J and Skyline the 13,568 Tons per decade of roads sediment was broken down as follows:

70% T/J = 9,498 TONS
25% Skyline = 3,392 TONS
5% Heli = 678 TONS

ASQ for the Decade = 850 MMbf. A ratio of tons of sediment per MMbf was calculated as a Forest Plan base value. An ASQ volume of 825 MMbf was used as the FORPLAN model did not include the S.Fk. Salmon River (25 MMbf).

T/J = 13,779 Tons (4281 harvest method sediment + 9498 roads sed.) divided by 570 MMbf (825 X 69%) = 24.17 Tons/MMbf

Sky = 4,814 Tons (1422 harvest method sediment + 3392 roads sed.) divided by 148 MMbf (825 X 18%) = 32.53 Tons/MMbf

Heli = 1,497 Tons (819 harvest method sediment + 678 roads sed.) divided by 107 MMbf (825 X 13%) = 13.99 Tons/MMbf

TOTAL = 20,090 Tons of sediment for the decade.

Changed Conditions (Actual vs. Planned)

Due to a change in the harvest areas from those anticipated and analyzed in the FORPLAN model of the Forest Plan (Change resulting from the need to salvage insect mortality and fire killed trees.) The actual harvest in the first three years of our Plan resulted in:

ASQ = 305.4 MMbf Harvest Systems 23% T/J; 4% SKY; 73% HELI

T/J = 70.2 MMbf (305.4 X 23%) X 24.17 Sed. Tons/MMbf = 1,697 Tons/3 years = 566/year

SKY= 12.2 MMbf (305.4 X 04%) X 32.53 Sed. Tons/MMbf = 397 Tons/3 years = 132/year

HELI = 223.0 MMbf (305.4 X 78%) X 13.99 Sed. Tons/ MMbf = 3,120 Tons/3 years = 1,040/year

TOTAL = 305.4 MMbf = 5,214 Tons of Sediment for the First 3 years
or 1,738 Tons/year

Anticipated Future Harvest 1993-1999/Forest Plan				
Fiscal Year	**Total ASQ**	**Trac/Jam**	**Skyline**	**Helicopter**
1993 1/	150 MMbf	42 MMbf (28%)	6MMbf (4%)	102 MMbf (68%)
1994 2/	62 MMbf	43 MMbf (69%)	11 MMbf (18%)	8 MMbf (13%)
1995 2/	62 MMbf	43 MMbf (69%)	11 MMbf (18%)	8 MMbf (13%)
1996 2/	61 MMbf	42 MMbf (28%)	11 MMbf (18%)	8 MMbf (13%)
1997 2/	61 MMbf	42 MMbf (28%)	11 MMbf (18%)	8 MMbf (13%)
1998 2/	62 MMbf	43 MMbf (69%)	11 MMbf (18%)	8 MMbf (13%)
1999 2/	62 MMbf	43 MMbf (69%)	11 MMbf (18%)	8 MMbf (13%)
Total	520	298	72	150

1/ actual/151,267 MMbf

2/ Forest Plan harvest method percentages

T/J = 298 MMbf X 24.17 Sed. Tons/MMbf = 7,203 Tons/7 yrs = 1,029/yr

SKY = 72 MMbf X 32.53 Sed. Tons/ MMbf= 2,342 Tons/7 yrs = 335/yr

HELI= 150 MMbf X 13.99 Sed. Tons/ MMbf = 2,098 Tons/7 yrs = 300/yr

TOTAL 520 MMbf = 11,643 Tons/7 yrs = 1,664/yr

Summary of Sediment Planned

3 yrs (1990-1992) @ 1738 + 7 yrs (1993-1999) @ 1663 = 16,855 Tons/decade or 84% of the Forest Plan FORPLAN model anticipated sediment production of 20,090 Tons.

Another Possibility

Following is another view of possible future harvest using a more realistic projection of harvest systems, considering current economics, resource issues, and ecosystem management.

Future Harvest 1993-1999/Forest Plan				
Fiscal Year	**Total ASQ**	**Trac/Jam**	**Skyline**	**Helicopter**
1993 1/	150 MMbf	42 MMbf (28%)	6MMbf (4%)	102 MMbf (68%)
1994 2/	62 MMbf	28 MMbf (45%)	9 MMbf (15%)	25 MMbf (40%)
1995 2/	62 MMbf	28 MMbf (45%)	9 MMbf (15%)	25 MMbf (40%)
1996 2/	61 MMbf	28 MMbf (45%)	9 MMbf (15%)	24 MMbf (40%)
1997 2/	61 MMbf	28 MMbf (45%)	9 MMbf (15%)	24 MMbf (40%)
1998 2/	62 MMbf	28 MMbf (45%)	9 MMbf (15%)	25 MMbf (40%)
1999 2/	62 MMbf	28 MMbf (45%)	9 MMbf (15%)	25 MMbf (40%)
Total	520	210	60	250

1/ actual 151,267 MMbf

3/ adjusted percentages for resource and ecosystem considerations

T/J = 210 MMbf X 24.17 Sed. Tons/MMbf = 5,076 Tons/7 yrs = 725/yr

SKY = 60 MMbf X 32.53 Sed. Tons/ MMbf= 1,952 Tons/7 yrs = 279/yr

HELI= 250 MMbf X 13.99 Sed. Tons/MMbf= 3,498 Tons/7 yrs = 500/yr

TOTAL 520 MMbf = 10,526 Tons/7 yrs 1,504/yr

Summary of sediment anticipated

3 yrs @ 1738 + 7 yrs @ 1504 = 15,742 Tons/decade or 78% of the Forest Plan FORPLAN model anticipated sediment production of 20,090 Tons.

The above figures assume a fixed miles of road per logging system. Any activities that require less miles of road than the Forest Plan assumptions will produce less sediment. Additional Helicopter logging, and/or more mitigation, would also show sediment savings when compared to the Forest Plan.

ID Team Recommendation

The ID Team recommends and considers it a must to continue with field monitoring to track and evaluate the effects of sediment production from harvest methods different from what was FORPLAN modeled. Also, we must determine the site specific and cumulative water quality effects of the large fire events and concentrated salvage harvest. In addition, the time is right to make a concentrated effort to update the BOISED & R1/R4 Fish Response Models with monitoring information.

With the knowledge that sediment was the constraint most often eliminating tentatively suited land from being selected as suitable acres in the FORPLAN model, a new run of the FORPLAN model with more realistic harvest system projections should be made to determine if additional suited land would be identified.

The sediment monitoring information being collected in 1993 on research areas and the major fire areas is needed to determine if an amendment to the Forest Plan is necessary. The Team recommends that this continue to be a high priority for monitoring and evaluation on the Forest.

Timber Sale Program Information Reporting System

Benefits and Costs of Timber Sales

Timber (TSPIRS)

The Forest Timber Sale Program Information Reporting System (TSPIRS) presents three viewpoints of the Forest's timber program for 1992; (1) revenues compared with costs (2) long term benefits, effects, and costs and (3) employment, income, and program. Each viewpoint presents a different approach to measure the timber program; each stands on its own and is not cumulative. Forest plans provide the management direction for all Forest Service resource activities. TSPIRS is one monitoring tool for us to find out how well we are managing according to the plan.

MONITORING ITEM:
Benefits and Costs of Timber Sales

MONITORING QUESTION

Are the economic benefits of harvesting timber on the Boise National Forest greater than the costs?

Background

Based on public concern over the benefits and costs of timber sales, Congress directed the Forest Service to develop a system that would show all timber related benefits and costs. The timber sale program information reporting system (TSPIRS) was developed jointly with the General Accounting Office (GAO) and the Forest Service. It has been reviewed and approved by Congress.

Evaluation/Summary

In 1992 revenues realized from the timber sale program on the Boise National Forest after expenses and the 25% payment to the State, totaled $2,493,936. Present Net Value (PNV) figured to be over 6 million dollars and total income to communities related to the sale program was over 57 million dollars.

Conclusion

The viewpoints offered through the Timber Sale Program Information Reporting System (TSPIRS) displays economic benefits associated with timber harvest on the Boise National Forest. The economic benefits are greater than the costs. It also should be noted that there has been a tremendous increase in the amount bid for timber in 1993. Thus the positive benefit to cost will be considerably greater this fiscal year.

Analysis

The (TSPIRS) reporting system consists of three tables which display costs and benefits of the Forest's timber management program. Following are the tables for fiscal year 1992.

Table 1. Financial Report (revenues compared with costs) is similar to a private business profit and loss statement.

This is the accounting statement of the Boise National Forest's Timber Management Program for fiscal year 1992. This Report displays revenues and costs by GAO Forest Service developed costs centers.

I. Revenues Totals (Approximate, see page V-6)	
1. Timber Sales	8,544,905
2. Purchaser Road Credit	650,021
3. Associated Charges	546,584
4. Interest & Penalties	13,747
Total Revenues	$975,525
II. Expenses	
1. Annual	$1,136,612
2. Sale Activity Allowance	2,515,415
3. Growth Activity Allowance	$337,223
4. Depreciation* *Depreciation on the "Basis of Useful Lives." (Roads = $419,674 and facilities = $1,946	421,620
5. General Administration	500,470
Total Operating Expenses	$4,911,340
III. Payment to State	**$2,349,981**
Payment to State is based on 25% of actual cash received for the Fiscal Year. Revenue items that qualify for payment are specified by law. Gain/<Loss>From Timber Sales (after payment to State) $2,493,936	
IV. Volume Harvested (MBF)	**105,994**
(Sold volume including personal use firewood)	96,300 Mbf

Table 2 is an economic analysis of the benefits and costs of the 1992 sale program. The present net value displayed in Table 2 includes both the costs and benefits related to the 1992 timber sales, as well as the future flow of timber and associated non-timber resource costs and benefits from the acres harvested in 1992.

The Table 2 analysis is consistent with the analysis and decisions of the Forest Plan. Non-timber values have been updated using the 1990 RPA values. Benefits and costs of the 1992 timber sales incurred in the past have been adjusted for changes in the value of the dollar and are expressed in 1992 dollars. Past costs and benefits have also been compounded from the time incurred to the present at the standard Forest Service rate from the time incurred to the present at the standard Forest Service rate of 4% to account for the time difference. Future benefits and costs have been discounted to the present using the same 4% rate.

The time span for costs and benefits considered in Table 2 is from the point in which it was decided to proceed with a given sale harvested in 1992 through an infinite series of regenerated stands. In addition to timber outputs, Table 2 included estimates of the present net value of non-timber outputs. The kinds and quantities of outputs associated with timber harvest on different categories of land is specified in the Forest Plan. Non-timber outputs are considered over the same time span as are timber outputs, but non-timber outputs and benefits beyond 50 years are usually negligible.

Table 2. Economic Report - long term benefits, effects, and costs expected from the acres harvested in FY 1992. This report is tied to Forest Plan data.

I. Present Value Benefits (PVB)	$12,379,000
A. Recreation	16,000
B. Water	$1,800,000
Total Present Benefits	$14,195,000
II. Negative Effects (NE)	
A. Recreation	($184,000)
B. Wildlife	$0
C. Fisheries	$0
Total Negative Effects	
III. Investments Value (IV)	
A. Timber	$6,489,000
B. Roads	$1,450,000
C. Wildlife	0
D. Fisheries	0
Total Investments	$7,939,000
IV. Present Net Value (PVB - (NE+IV)	$6,072,000

Table 3 displays the money impacts from 1992 harvest activities that are relative to local employment and income.

Table 3. Employment, Income and Program Report

Employment and Income	Approximate Values
Total Jobs	$1,153
Total Income to Communities*	$57,038,000
*Total Income - Includes wages and salaries (and supplements), Proprietor's income and property income such as rent and profits. Employment - Average annual full-time equivalents. *Because the total includes several significant items in addition to wages and salaries, total income divided by employment cannot be compared with annual wages for an industry or region.	

Timber Related Program Accomplishments/1992

Volume	
Offered	92.7 MMbf
Sold	92.2 MMbf
Harvested	106.0 MMbf
Acres Harvested	53,848
Non-Convertible Products Christmas Trees Sold	3,765
Acres Regenerated	14,106
Acres Precommercially Thinned	3,916
Miles of Roads to support Timber Program	
Construction	2.0 miles
Reconstruction	30.7 miles
Road Total	32.7 miles
Statistics from the Boise Forest Management Plan	
Gross Acreage on Forest-Proclaimed Acres	2,958,661
Acres Suitable for Timber Management	656,000

First Decade Average Annual Allowable Sale Quantity (ASQ)		
Base Sale Schedule	Mbf/year	74,000
White Woods (LP &AF)	Mbf/year	6,500
Peace Rock Mgmt. Area	Mbf/year	2,000
South Fork Salmon River	Mbf/year	2,500
Total ASQ		85,000
Regeneration Harvest Acres	Acres/year	10,200
Reforestation	Acres/year	6,700
Precommercial Thinning	Acres/year	1,500
Actual Boise NF Statistics - FY90-92 (Average)		
Volume Offered	Mbf/year	115,700
Volume Harvested	Mbf/year	102,000
Regeneration Accomplished	Acres/year	8,231
Precommercial Thinning		
Accomplished	Acres/year	3,117
Road Construction	Miles/year	41.8
Acres Harvested All Methods	Acres/year	30,434
This Summary is supported by technical documents on fire at the Forest Supervisor's Office. Note: m=thousand; bf=board feet, therefore, Mbf=Thousand Board Feet, and MMbf=Thousand, thousand (one million) Board Feet.		

ID Team Recommendation

The ID Team recommendation related to scheduling timber harvest can be found in the **Need for Change** section of this report (page II-10 & II-11).

Even higher stumpage values than was analyzed here were experienced in FY93. This could indicate that it is feasible to require more expensive harvest methods with less impacts on the resources in future logging.

The ID Team recommends that the Boise National Forest FORPLAN model be ran with a new mix of logging methods, such as increased helicopter logging, to determine effects of change, i.e. present net value (PNV) sensitivity to change and need for Forest Plan change.

Watershed and Fisheries Monitoring

Plan

M/E Example

Assessment of Streambank Stability and Utilization Monitoring For Bear Valley and Johnson Creek Basin Cattle Allotments/1993

Each year a monitoring plan and results document is produced by the Boise National Forest Watershed and Fisheries Resource Units. Summaries are included for each soil, water, and fisheries monitoring project identified in this monitoring plan. The monitoring results for 1990 and 1991 are available through the Forest Supervisor's Office. The 1992 results will be published this winter.

Portions of the 1992 Watershed and Fisheries Monitoring Plan and scheduled monitoring projects follow with an example of a monitoring and evaluation M/E project in Bear Valley and Johnson Creek basin as a current example of M/E underway with the Watershed and Fisheries Resource Group.

Monitoring Plan

The Forest-wide Watershed and Fisheries Monitoring Plan is tiered to the Forest Plan and summarizes monitoring planned for FY 1992 based on available budgets and Forest priorities. It defines the scope of the current monitoring effort and shows the projects to be implemented this year.

Four types of monitoring are anticipated:

1. Implementation Monitoring

Implementation monitoring is the most common and extensive form of monitoring. It's purpose is to document whether project plans and prescribed practices are implemented (1) as designed and, (2) in accordance with requirements, standards, and guidelines. The basic question addressed is: "Did we do what we said we were going to do?"

2. Baseline Monitoring

Baseline monitoring provides broad overview coverage of the Forest. Baseline monitoring sites scattered throughout the Forest have been selected to representatively sample conditions on the Forest. These stations serve as indicators of long-term trend and to characterize the resource.

3. Effectiveness Monitoring

The objective of effectiveness monitoring is to determine if mitigation measures and practices work as anticipated to meet the Forest's resource management objectives. Effectiveness monitoring focuses on cause and effect relationships between activities and their effect. The question being asked is: "Did the practice or activity do what we wanted it to do?".

Effectiveness monitoring is done on a sample basis to represent typical conditions so that results can be extrapolated. Only a fraction of ongoing projects will be monitored. As a general rule, effectiveness monitoring is quantitative and focuses on the least complicated measurements with observations close to the source of disturbance. Often several resources, such as soil, water, and fish habitat, are jointly evaluated in a given monitoring effort.

4. Validation Monitoring

Validation monitoring is the most intensive level of monitoring identified. It seeks to answer whether Forest Plan assumptions, such as standards, guidelines, and predictive model coefficients are appropriate to meet regulations, policy, and objectives. Validation monitoring requires a long term commitment and intensive data collection at each site. It needs to be closely coordinated with, or in many cases conducted by, researchers.

Current Monitoring Program

Specific monitoring projects planned and funded for FY 1992 by the Boise National Forest as well as some monitoring being done by Out-Service cooperators are summarized in the following pages. Projects are listed by the type of monitoring (Implementation, Baseline, Effectiveness, Validation) and then further grouped by Ranger Districts. In-Service Boise National Forest monitoring projects are listed before those of our cooperators. Under type of monitoring, the major resource or resources being monitored by a specific project are identified. Monitoring taking place within Stream Segments of Concern are also identified. Results from all projects listed here will be available in the 1992 edition of "Watershed and Fisheries Monitoring Results."

Summary of Boise National Forest Monitoring Projects

Implementation Monitoring:

FY 1992 Implementation Monitoring (Soil/Water)

Warm Lake Fire Recovery Fisheries Habitat Projects (Fisheries)

Baseline Monitoring:

Forest Plan Baseline Monitoring Sites (Water/Fisheries)

Bruce Meadows Precipitation Gage (Water)

MF Payette River Sediment Movement Photos (Water)

MF Payette River Sediment Movement Cross-sections (Water)

South Fork Payette River Sediment Movement (Water)

Spruce Creek Roadless EIS (Water/Soil/Fisheries)

Effectiveness Monitoring:

Smith Creek Fisheries Habitat Improvement (Fisheries)

South Fork Boise River Riparian Monitoring (Fisheries)

Bogus Basin Ski Area (Water/Soil)

Eastside Salvage Timber Sale (Water/Fisheries)

North Gold Timber Sale (Water/Fisheries)

Warm Lake Fire Recovery Core Samples (Fisheries)

Warm Lake Fire Recovery Cobble Embeddedness (Fisheries)

Ice Hole Fish Habitat Improvement (Fisheries)
South Fork Salmon River Core Sampling (Fisheries)
South Fork Salmon River Photo Site Monitoring (Fisheries)
South Fork Salmon River Snorkeling (Fisheries)
South Fork Salmon River Houselog TS (Water/Soil)
Westside Allotment Management Plan Revision (Water/Soil/Fisheries)
South Fork Salmon River Cross-section Monitoring (Water)
Warm Lake Fire Recovery Contour Felling (Soil)
Warm Lake Fire Recovery Seeding (Soil
Warm Lake Fire Recovery Watershed Reforestation (Soil)
Bear Valley Core Samples (Fisheries
Lowman Complex Fire Soil Erosion (Soil)
Lowman Complex Fire Stream Channel Monitoring (Water)
Lowman Complex Fire Large Organic Debris (Water/Fisheries)
Lowman Complex Fire Cobble Embeddedness (Fisheries)
Lowman Complex Fire Macroinvertebrates (Fisheries)
Lowman Complex Fire Rehabilitation Measures (Soil/Water)
Lowman Complex Fire Log Structures (Soil/Water)
Lowman Complex Fire Soil Stabilization Chemicals (Soil)
Far East Salvage Sale (Soil)
South Whitehawk Salvage Sale (Soil)
Cache Creek Timber Sale (Water)
Clear Creek Salvage Timber Sale (Water/Fisheries)
Clear Creek Salvage Timber Sale (Water/Fisheries/Riparian)
Clear Creek Salvage Timber Sale (Water Quality/Fisheries)
Clear Creek Salvage Timber Sale (Water Quality/Fisheries/Riparian)
Clear Creek Salvage Timber Sale (Fisheries)
Clear Creek Salvage Timber Sale (Fisheries/Riparian)
Clear Creek Salvage Timber Sale (Fisheries/Riparian)
Bear Valley Allotment Exclosures & Riparian Pasture (Water/Fisheries)
Bear Valley Allotment Tributaries (Fisheries/Water/Riparian)

Bear Valley Allotment Upland Rangeland Areas (Soil)

Bear Valley Allotment Woody Species Response (Fisheries/Water)

Bear Valley Allotment Vegetative Use (Forage/Soil)

Squaw Creek Fisheries Habitat Improvement (Fisheries

Squaw Creek Riparian Monitoring (Fisheries)

Out-Service Cooperative Monitoring

Bonneville Power Administration:

BPA Anadromous Fish Habitat Enhancements for USFS (Fisheries)

BPA Anadromous Fish Habitat Enhancements for IDF&G (Fisheries)

USFS Intermountain Forest and Range Experiment Station:

South Fork Salmon River Sediment Studies (Soil/Water/Fisheries)

Watershed and Fisheries M/E Example

Assessment of Streambank Stability and Utilization Monitoring Data for Bear Valley and Johnson Creek Basin Cattle Allotments

Background

Removal of streambank/riparian vegetation along with mechanical bank damage reduces the structural stability of the stream channel with several resultant negative impacts to fish productivity (Platts 1990, Platts and Nelson 1989). Reduction in bank cover related to overhanging vegetation, root vegetation, and undercut bank has been correlated to reductions in fish production (Wesche 1980, Binns 1979, Sullivan et al. 1987). Streambank destabilization and resultant erosion can increase substrate embeddedness (Shepard 1989, Nelson et al. in press, Hawkins et al. 1983). Increases in substrate embeddedness impair food production and block refuge for young trout as described in Rinne (1990) for livestock grazing impacts.

Fish use streambank areas in small streams for the protective cover they provide. Stable and covered banks control water velocities, provide shade for temperature control, and supply terrestrial food needed to support salmonids (Platts 1990, p. I-24).

Analysis

Streambanks were considered stable if they did not show indications of any of the following features:

Breakdown - Obvious blocks of bank broken away and lying adjacent to the bank breakage.

Slumping or False Bank - Bank has obviously slipped down, cracks may or may not be obvious, but the slump feature is obvious.

Fracture - A crack is visibly obvious on the bank indicating that the block of bank is about to slump or move into the stream.

Vertical and Eroding - The bank is mostly uncovered as defined below and the bank angle is steeper than 80 degrees from the horizontal.

Streambanks were considered covered if they showed any of the following features:

Perennial vegetation ground cover is greater than 50 percent.

Roots of vegetation cover more than 50 percent of the bank (deep rooted plants such as willows and sedges provide such root cover).

At least 50 percent of the bank surfaces are protected by rocks of cobble size or larger.

At least 50 percent of the bank surfaces are protected by logs of 4 inch diameter or larger.

Streambank stability was estimated using a simplified modification of the method described by Platts, Megahan, and Minshall (1983, p. 13). The modification allowed for measuring bank stability in a more objective fashion. This measure can be made rapidly without any specialized equipment. The lengths of banks on both sides of the stream throughout the entire linear distance of the representative reach were measured and proportioned into four stability classes as follows:

1. Mostly covered and stable (non-erosional). Streambanks are over 50 percent covered as defined above. Streambanks are stable as defined above. Banks associated with gravel bars having perennial vegetation above the scour line are in this category.

2. Mostly covered and unstable (vulnerable). Streambanks are over 50 percent covered as defined above. Streambanks are unstable as defined above. Such banks are typical of "false banks" observed in meadows where breakdown, slumping, and/or fracture show instability yet vegetative cover is abundant.

3. Mostly uncovered and stable (vulnerable). Streambanks are less than 50 percent covered as defined above. Streambanks are stable as defined above. Uncovered, stable banks are typical of streamsides trampled by concentrations of cattle. Such trampling flattens the bank so that slumping and breakdown do not occur even though vegetative cover is significantly reduced or eliminated.

4. Mostly uncovered and unstable (erosional). Streambanks are less than 50 percent covered as defined above. They are also unstable as defined above. these are the standard bare, eroding streambanks and include all banks mostly uncovered that are at a steep angle to the water surface.

The streambank must be envisioned as that part of the channel most susceptible to erosion during high water events. It represents the steeper-sloped sides of the stream channel. Bank cover is generally viewed at the vegetative greenline located below the bankful level but above any natural undercutting bank scour (above the scour line). Using a measuring rod, the length of streambank in each stability class was recorded in order of occurrence within the sample station.

Streambanks locations are defined by morphological features of the stream channel. They are created by the forces of streamflow acting upon the resistances to streamflow. Streamflow forces are greatest at high flow. Perennial riparian vegetation

occurs at and above this level in the channel. A scour feature can easily be recognized, because perennial vegetation grows mostly above the flooded channel, and each year most scouring occurs where vegetation does not cover the ground. Below this scour line, erosion and bed scour is common. Banks form above the scour line where vegetation, roots, rocks, and other forms of resistance counter the flow energy. We used the following guidelines to locate banks for evaluation.

Locate the scour line in the stream reach. The scour line is at some elevation above the current water line. It can be located by examining features in the channel. The ceiling of undercut banks, the limit of sod forming vegetation, and the limit of perennial vegetation all clearly demark the scour line level.

View the scour line level along the entire length of the stream reach. The bank is that portion of the channel margin above the scour line at the steepest angle to the water surface.

On gravel and sand bars, the bank is often defined by the limit of sod or perennial vegetation, or by an indentation in the bar (local steepened area) just above the scour line. That small indentation or lip is the bank as defined in this procedure.

When the bank is not evident due to excessive bar deposition or to streamside trampling, the bank is classified "stable but uncovered".

The following steps were used to complete the bank monitoring data collection procedure at a each monitoring station.

1. At each monitoring station, station name, investigator name, and date were recorded. The downstream left, upstream left, upstream right, and downstream right banks were staked. Photographs were taken of the bank at each stake location.

2. Measurements of bank length stable, unstable, covered, and uncovered were started at the downstream, left side stake. The left bank was measured from the downstream stake to the upstream stake. Measurements of the right bank were made by crossing over and starting at the upstream stake and proceeding to the downstream right side stake. Lengths of bank in the four bank classes were recorded under the appropriate code (CS = covered and stable, CU = covered and unstable, US = uncovered and stable, and UU = uncovered and unstable).

Streambanks were sampled once before the grazing season, every other week during the grazing season (as long as the cattle were on a unit), and monthly after the grazing season. Comparisons were made to the previous data. If no change had occurred to the bank, the same number was recorded. If a change had occurred, all changed measurements were recorded on the same line but in the next column.

Because streambank parameters can change during the livestock grazing period, the data form facilitated changes observed over the grazing season or from season to season. Grazing intensity should not be sufficient to cause a seasonal change equal to or greater than natural streambank building processes. In many cases, more than 10 percent to 15 percent reduction in the amount of stable or covered streambank over the course of a grazing season may exceed the rate of natural streambank building and contribute to declining trends in bank condition.

Livestock utilization was monitored in conjunction with streambank monitoring to link such use with changes observed on the bank. Only vegetation used during the current growing season was evaluated. The "Vegetative Use Rating", (Table VI-9 in Platts 1990) was used to estimate utilization. A utilization cage is placed on the streambank within 10 feet of the edge of the bank and located on plant communities typical of the streamside forage. Utilization was estimated by ocular comparisons to unused vegetation within the cage. The following summarizes this technique:

Light Use (0 - 25 percent) - Almost all of the plant biomass outside the cage is comparable to inside. Less than one fourth of the stubble height has been removed on the average.

Medium Use (26 - 50 percent) - At least half of the plant biomass remains. Average stubble height is greater than half of its potential height as observed in the cage.

High Use (51 - 75 percent) - Less than half of the potential plant biomass remains. Plant stubble height is usually over 2 inches or at least on fourth of its potential height.

Extreme Use (76 - 100 percent) - Less than 2 inches of stubble remains. Almost all biomass has been used.

In general, stubble height comparisons between forage within the cage to outside the cage facilitated the determination of percent utilization. The following guide was used:

Percent of stubble height used	Utilization
10	<5
25	10
33	15
50	25
66	40
75	50
85	75
95+	100

Immediately after cattle were removed from the pasture, utilization cages were clipped and weighed to determine production. A randomly selected grazed site was also clipped and weighed and compared to the ungrazed site to determine the percent of forage production consumed during the grazing period.

Woody stem regeneration was collected at willow planting sites in the Big Meadows on Bear Valley Creek. No trend was developed because sites have been only sampled for one year. Trends and data will be reported in 1993.

Study Site Location

Streambank stability stations were located in Bear Valley, Elk Creek, Sand Creek and Deer Creek allotments. The total number of stations that could feasibly be sampled were determined for each stream. Stations were evenly spaced along the length of the streams and plotted on maps. Stations were located in the field from the maps. The downstream stake was located 200 ft upstream from the point identified on the map. If a split channel or stream crossing was encountered, the stake was moved upstream a random distance (1-50 ft). All allotment units had streambank stability stations and the distribution is as follows:

Bear Valley Allotment	
Riparian Pasture	10
Bruce Meadows Unit	3
Big Meadows	5
Elk Creek Allotment	
Riparian Pasture	7
Poker/Ayers Unit	7
Stansfield Unit	6
Deer Creek Allotment	5
Sand Creek Allotment	7

Evaluation/Summary

Monitoring Results

We examined bank stability trends for each pasture in the 4 allotments and compared changes with rates of cattle utilization and periods of cattle utilization. Following is a summary of this data by allotment. The documentation for this monitoring project

contains graphics illustrating the results in each allotment. The complete document can be obtained by contacting the Fisheries Resource Area at the Boise National Forest Supervisor's Office.

Bear Valley Allotment

Declines in bank stability occurred mostly while cattle were present in each pasture. The riparian pasture was grazed first and declines were detected during and immediately following the 3 week grazing period. Similar effects were observed in the Bruce and Big Meadows pastures. The average percent bank stability for the riparian pasture is compared with reference (ungrazed) sites. Bank stabilities declined on the average by about 10 percent in the grazed area, but did not decline in the ungrazed references. We plotted the relationship between cattle utilization and percent change in bank stability. A weak negative relationship was indicated by the data.

Elk Creek Allotment

Decreases in bank stability averaged 10 to 26 percent on streams in this allotment. The most severe decreases occurred in the non-riparian pastures. Decreases occurred while cattle were present in all three pastures. Some decreases were detected in the Poker/Ayers unit after cattle had been removed. There was a weak negative relationship between utilization rate and bank stability, but a stronger negative relationship between bank cover and utilization.

Sand Creek Allotment

Slight decreases in bank stability occurred during mid-summer on this allotment, but changes were not as great as those observed in the Bear Valley Basin. There was a stronger negative relationship with the cattle utilization rate but the correlation is still weak. Again, a much stronger negative relationship exists between bank cover and utilization rate.

Trend data shows that bank stability declines by about 10 percent at 45 percent use. The decline in bank stability is greatest during grazing use periods (15 percent for 45 percent use). Stability declines less than 5 percent in relation to utilization during non-scheduled use. Utilization occurring during this period is from wildlife, or from cattle drifting back into the pastures from other areas.

Forest Goals: Individual station data for an allotment unit and the allotment unit average were compared to Forest Plan Goals for bank stability, cover, and utilization. Following is a summary of this data by allotment.

Bear Valley Allotment

Average streambank cover was at or above the Forest Plan Goal of 85 percent on all three units in the allotment. Final streambank cover values ranged from 36 percent to 96 percent. Streamside livestock utilization rates exceeded the Forest Plan Standard of 45 percent at only 2 of 15 monitoring stations. Averages for all three units were below the Standard but increased after cattle removal in the Riparian Pasture due to livestock drifting back into the unit. Streambank stability was below the Forest Plan Goal of 85 percent at all but one station and declined over the summer by about 12 percent, on the average at all stations. Average declines during the summer were about the same in all three grazing units. Smaller rates of decline occurred during the first two week of grazing than in subsequent weeks. Existing bank stability condition varied widely between stations (0 percent to 75 percent stable).

Elk Creek Allotment

Average streambank cover was at or above the Forest Plan Goal in all units except the Riparian Pasture. Final bank cover values ranged from 15 percent to 88 percent. Three of 16 stations exceeded the Forest Plan Standard for streamside utilization. Average utilization rates were below the standard. Streambank stability was below the Forest Plan Goal at all stations. Average stability values range from 50 percent to 60 percent of the banks in stable condition. Declines this past season ranged from 8 percent in the Riparian Pasture to 27 percent in the Poker/Ayers Unit. Bank stability varied widely among stations (10 percent to 80 percent) as compared to streambank cover and utilization.

Deer Creek Allotment

Average streambank cover at all stations was above the Forest Plan Goal in the Allotment. One station exceeded the Forest Plan Standard for streamside utilization, while the average for all stations was below the standard. Average bank stability was below the Forest Plan Standard and declined approximately 11 percent through the grazing season. Two out of five individual stations were at or above the Standard.

Sand Creek Allotment

Average streambank cover was at or above the Forest Plan goal of 85 percent at all stations except on Johnson and Rock Creeks in the Pen Basin area. There was very little change in streambank cover during the grazing season. Average streambank stability was below the Forest Plan goal at all sites except those on Bobcat Creek. Small changes in percent bank stability were detected in 1992 (from 0 to 7 percent decline). Utilization at stations in this allotment occurred throughout the grazing

season. Utilization at two stations on Johnson Creek in the Pen Basin area exceeded the Forest Plan standard. Lack of adequate bank stability and cover was also noted in this same area.

Conclusions

Chinook production has steadily declined in the Bear Valley Basin since the early 1950's. The decline in the number of spawning redds has been documented by Petrosky and Holubetz (1986), Howell et al. (1985), Konopacky et al. (1985) and Idaho Fish and Game File Data. This decline is in part due to factors outside the Bear Valley Basin because the number of returning spawners depends on downstream migration conditions and harvest.

Burton (1992) assessed the trends of other resident salmonids within Bear Valley Basin from other studies to determine what effect habitat condition and land management activities may have on Chinook production. He found that data in recent years indicated a decline in resident salmonid densities. Land use activities within the Basin have increased sedimentation and have likely led to declines in salmonid production. Sedimentation effects have influenced the quality of habitat by impairing spawning gravel conditions and reducing pool habitat essential to rearing.

We focused on the effects of livestock grazing on streambank cover and stability within the Bear Valley and Johnson Creek Drainages and how they may affect Chinook production. Average bank cover and average utilization was usually at or above the Forest Plan Goal and Standard. Bank vegetation was primarily composed of deep rooted sedges and willows that would allow for good bank protection. However, bank stability was usually below the Forest Plan Goal. Bank stability rapidly decreased (10 percent - 27 percent) while cattle were present in each pasture and stabilized after cattle removal.

Cattle directly influence bank stability by trampling, sheering, and trailing. The high bank instability and changes we observed this past field season are a reflection of past bank impacts. However, some stability declines were observed in conjunction with the presence of livestock. While cattle are present, hoof shearing can be observed to break down small segments of bank. Perhaps of greater significance are the bank stability changes caused by streamside vegetation alteration associated with the trailing on top of banks. These trails weakened the root strength in the bank and started a series of processes leading to bank collapse and slumping. Some recovery in bank stability is likely to occur between now and next summer. Platts and Nelson (1986) conducted a study on the effects of livestock grazing on aquatic and riparian habitat in the Bear Valley drainage between 1975 and 1986. We plotted their pre-exclosure and post-

exclosure bank stability data to determine recovery rates (Figure 2). Comparing post-exclosure bank stability information, we estimated that natural bank recovery was between 10 percent and 15 percent. However, because the exclosure studies monitored recovery trends in the absence of livestock, we can not confidently predict recovery rates in the riparian pasture. This year's stations will be monitored through next season to evaluate recovery rates within all pasture units.

Long-term trends in bank stability as related to sediment production are of concern because of the effect on egg-to-parr survival for Chinook. Eggs are deposited and incubated in the intragravel environment, where conditions are important to production of young fish. Embryo survival has been shown to be impaired by increasing percentages of fine sediment in the intragravel environment (Tappel and Bjornn 1983, and Irving and Bjornn 1984). Fine sediments reduce gravel permeability and therefore block delivery of dissolved oxygen needed for embryo survival (Burton et al. 1990). Furthmore, excessive fine sands and silts in the egg pockets of developing alevins can restrict upward movements of emerging fish causing entrapment and mortality. Such conditions are apparently present in Bear Valley Basin. The graph in Figure 1 (Scully and Petroski, 1991) shows egg-to-parr survival as related to percent surface fine sediment. As surface sediment increases above 30 percent, survival rates decline rapidly. Burton (1992b) developed a relationship between bank stability and fine sediment for C-channel meadow streams (also Figure 1). Decreases in bank stability correspond to increases in surface fine sediment ($r = .82$). Using the these relationships, bank stability data can be related to Chinook egg-to-parr survival. The Forest Plan bank stability Goal of 85 percent translates to egg-to-parr survival of approximately 29 percent. Converting average bank stability data to egg-to-parr survival for each allotment pasture unit reveals that survival would be less than 3.3 percent in all units. Egg-to-parr survival might increase 9 fold (from < 3.3 percent to 29 percent) if bank stability was improved to the Forest Plan Goal.

Heavier utilization did decrease bank stability and cover in most cases. Platts (1983) stated that proper forage utilization in riparian areas is an important factor in successful riparian management. Bear Valley Allotment utilization standards in 1992 were 45 percent in riparian areas. Due to the decrease in bank stability and cover, utilization in 1993 will be reduced to 22 percent or 6 inch stubble height (whichever occurred first) in the riparian pasture and 45 percent in other riparian areas. The sections of Bear Valley Creek outside the riparian pasture will be fenced and excluded from livestock grazing. Platts (1983) observed that riparian areas within a riparian pasture and lightly used by livestock (20 percent-40 percent; or the amount of grazing that will cause no damage) or excluded from livestock grazing will have a good to excellent potential for stream rehabilitation. The slight downward trend in bank stability and cover seen in the 1992 data will be closely monitored in following years.

Bank cover, bank stability, and utilization have been monitored for one year and trend in aquatic habitat condition cannot yet be determined. A long-term, intensive aquatic habitat monitoring program has been implemented to follow changes in bank stability and bank cover due to improvements in land management activities. Next year's monitoring data will help to determine if management actions are recovering bank stability. Monitoring will be conducted within large exclosures on Bear Valley Creek, the riparian exclosure on Johnson Creek, and in the non-use pastures on Bearskin and Johnson Creeks. These data, compared with those from the active pastures will help to determine bank condition trends and rates of recovery.

Budget

Full Implementation Funds Compared to Allocated Funds

Operating Budget Including Trust Funds for FY 1993

Receipts for 1990, 1991, and 1992

Miscellaneous Economic Information

Federal regulations calls for "documentation of costs associated with carrying out the planned management precriptions as compared with costs estimated in the Forest Plan."

MONITORING ITEM:
Fund Allocation vs. Implementation Costs

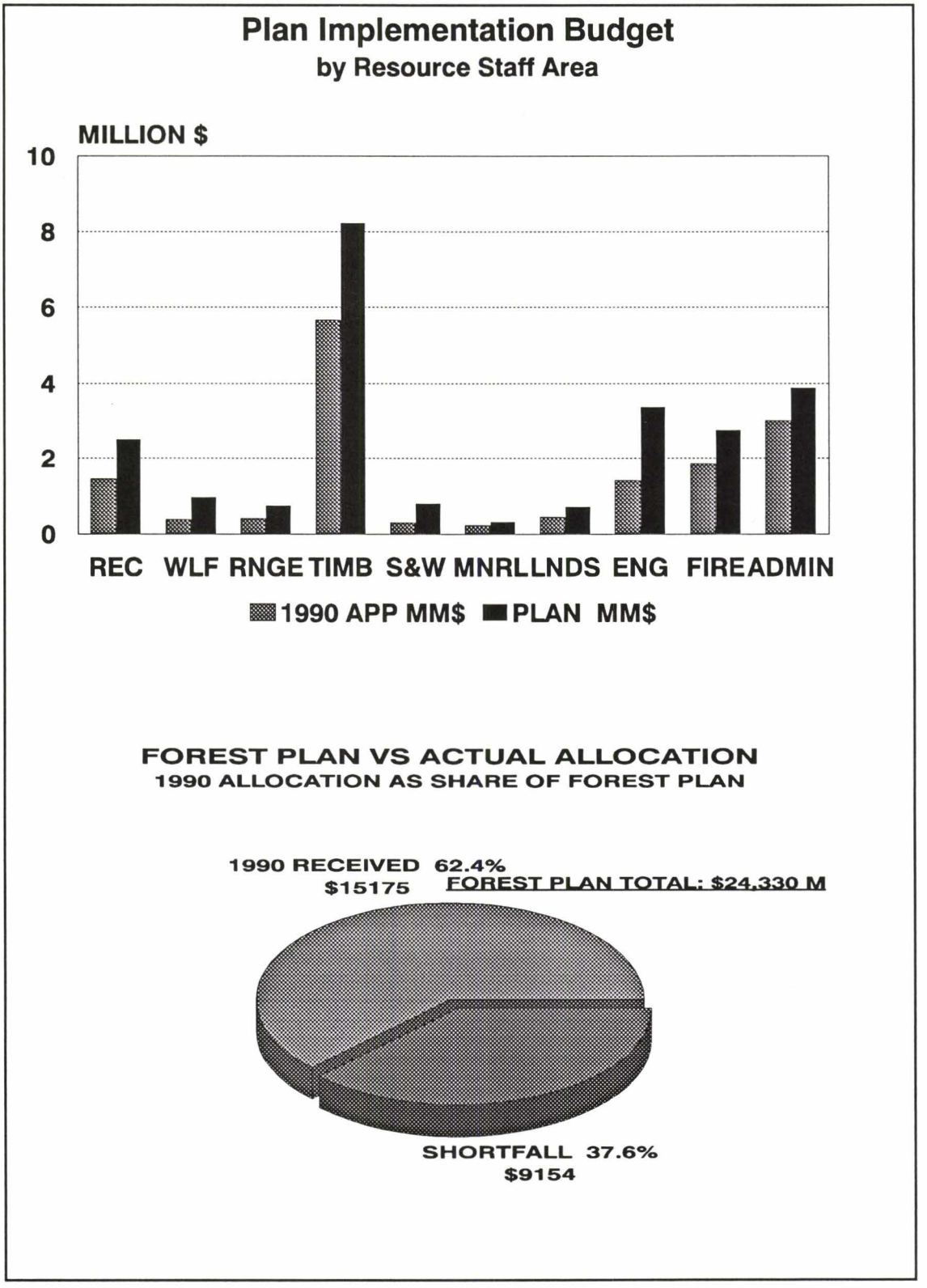
MONITORING QUESTION

What Portion of the funds needed to fully implement the Forest Plan is being allocated to the Forest?

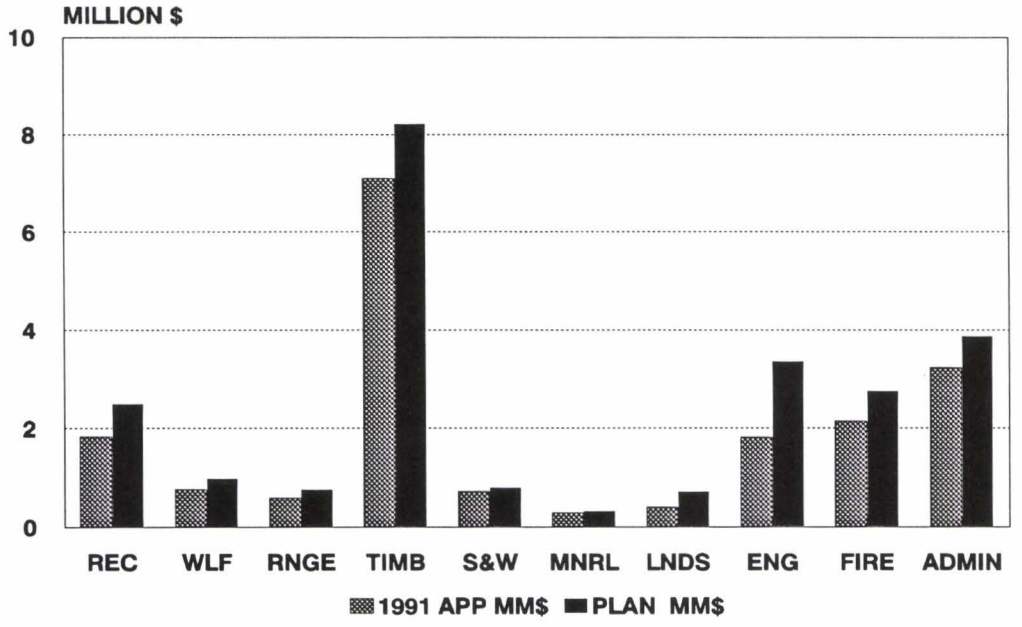
Background

The Forest Service submits to Congress a proposal for funding for each fiscal year. The budget proposal is based on scheduled activities for all National Forests in the nation for a fiscal year three years in the future. The budget submitted is a collection of the costs of programs designed to meet the goals and objectives in the Forest Plans. After the budget proposal is submitted to Congress, and Congress has approved a final budget, the annual program of work is then finalized. If all proposed implementation projects are not funded, then only a portion of the work can be performed. The Forest implementation plan is adjusted in the beginning of each fiscal year to deal with actual funding allocated to the Forest. The following graphs demonstrate the funds needed to fully implement the Plan and the actual funding available to the Boise National Forest in 1990, 1991, and 1992.

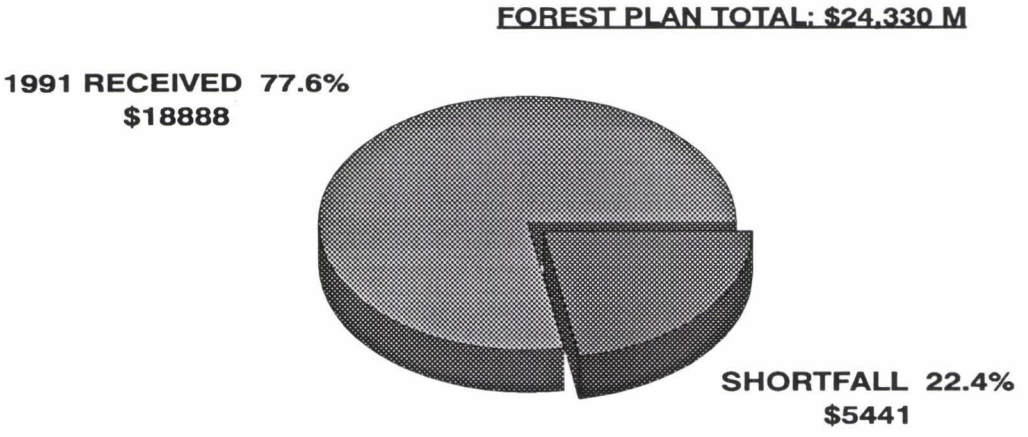
Analysis


Plan Implementation Budget
by Resource Staff Area
MILLION $
10
8
6
4
2
0
REC WLF RNGE TIMB S&W MNRLLNDS ENG FIRE ADMIN
1990 APP MM$
PLAN MM$
FOREST PLAN VS ACTUAL ALLOCATION
1990 ALLOCATION AS SHARE OF FOREST PLAN
1990 RECEIVED 62.4%
$15175
FOREST PLAN TOTAL: $24,330 M
SHORTFALL 37.6%
$9154

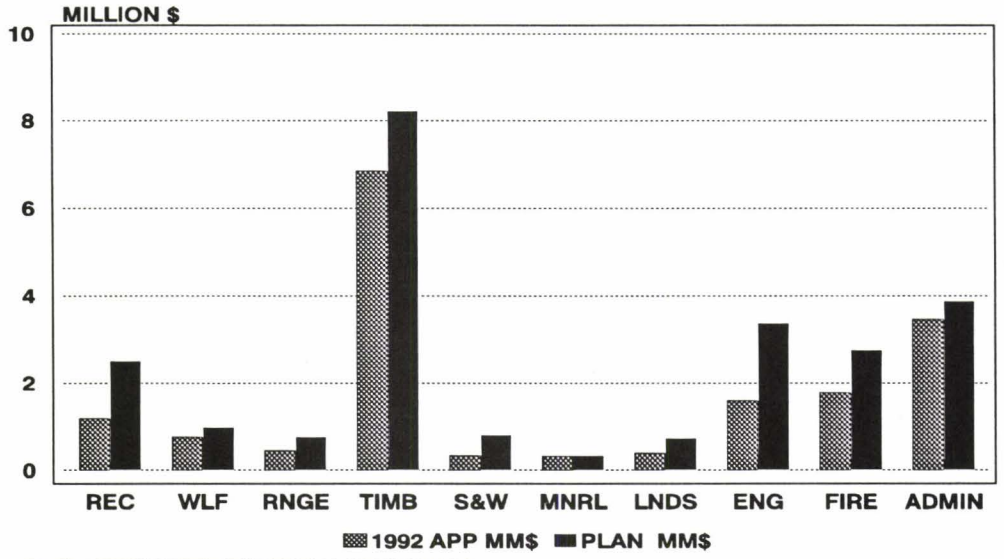
Plan Implementation Budget
by Resource Staff Area



FOREST PLAN VS ACTUAL ALLOCATION
1991 ALLOCATION AS SHARE OF FOREST PLAN

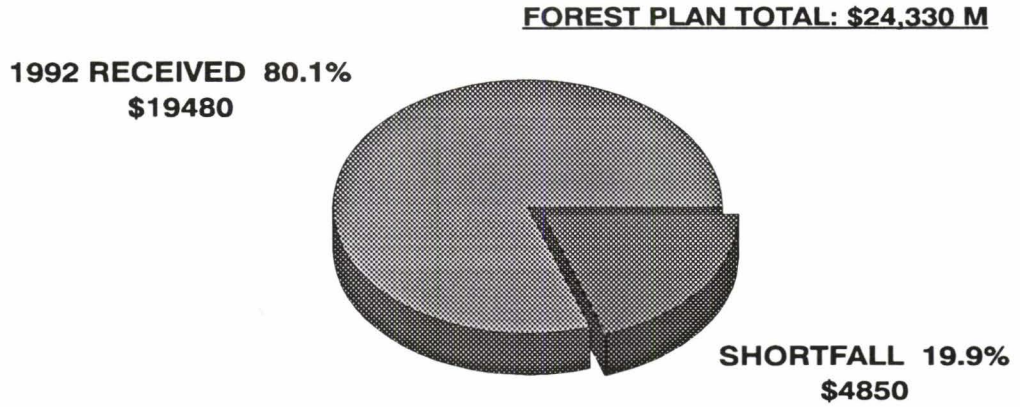


Plan Implementation Budget
by Resource Staff Area



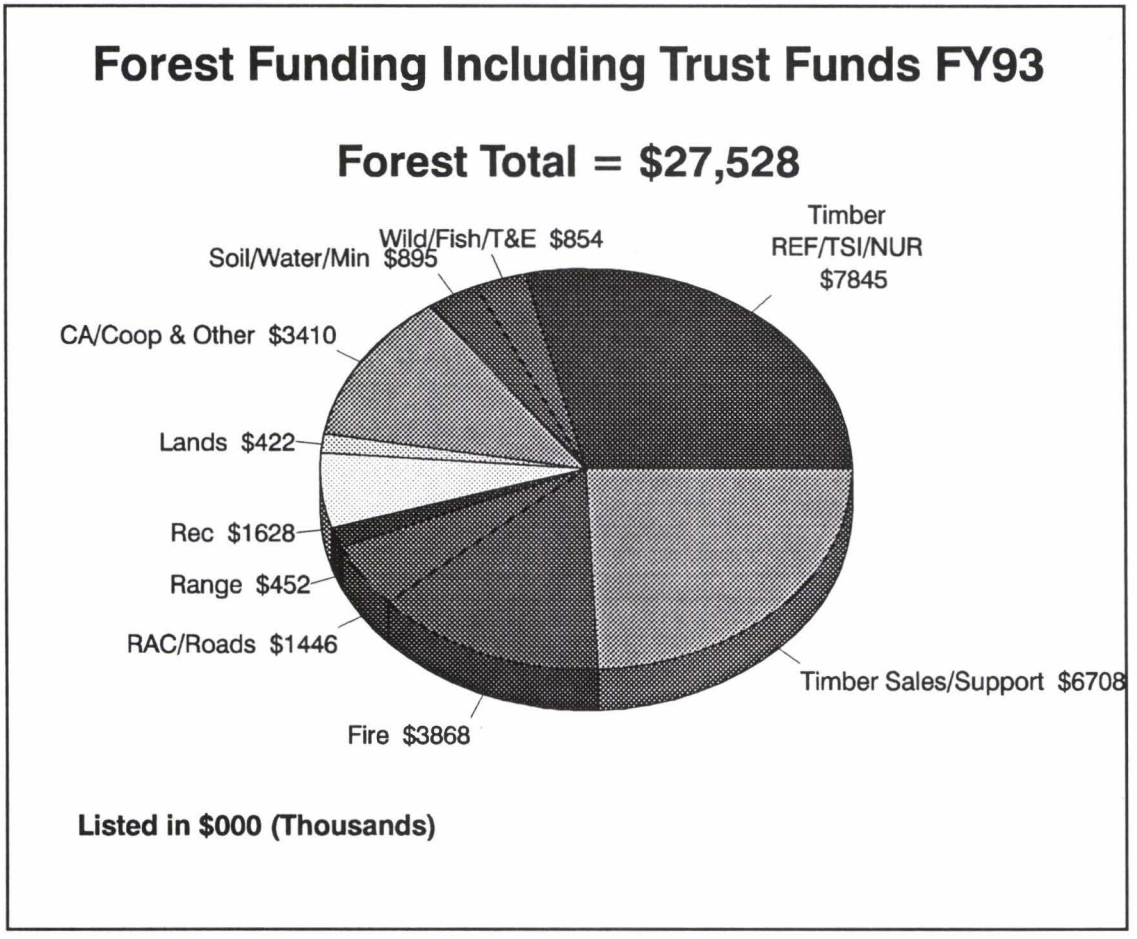
EXCLUDES REFORESTATION, KRIBY DAM

FOREST PLAN VS ACTUAL ALLOCATION
1992 ALLOCATION AS SHARE OF FOREST PLAN



Actual Dollars

The dollars available to each forest can vary considerably from the appropriated funds by the use of what are known as trust and permanent fund accounts. For example, each time a timber sale is sold a portion of the base price is placed in a trust fund (identified as KV funds) for reforestation. Once the sale is harvested and ready for reforestation, the reforestation dollars are allocated from the trust fund for that purpose only. Others include funds for the Salvage Sale Program and brush disposal (BD).



Timber Program Funding Elements: Reforestation $5,774,000, TSI 1,164,000, Nursery 907,000, Plan and Silv Exam 470,000, Sale Prep + ET113 650,000, Sales Harvest Admin 268,000, Road Timber 872,000, Gen Admin (KV) 465,000 KV = 3,698,000, Gen Admin (Prorated) NFGA 540,000, Sale Prep Salvage 2,008,000, Sale Res Support Salvage 807,000, Sale Harvest Admin Salvage 1,195,000, Roads TM Salvage 438,000, Gen Adm Salvage 455,000, SSF = $4,903,000, Brush Disposal 429,000, Gen Admin Brush 55,000 BD = $ 484,000, Gen Admin WCF 110,000, TOTAL TIMBER PROGRAM $16,607,000.

RECEIPTS	FY 1990	FY 1991	FY 1992
Timber	$1,960,456.84	$815,690.98	$5,140,641.38
K-V	$2,745,908.14	$4,311,214.56	$2,060,810.06
Timber Pur Rd Cr	$491,543.52	$176,009.65	$699,429.82
Salvage Sale	$1,291,009.93	$608,851.67	$1,499,041.21
Total Timber	$6,488,918.43	$5,911,566.86	$9,399,922.47
Land Uses	$26,229.77	$49,386.20	$36,018.55
Rec.Spec. Uses	$111,804.50	$140,757.96	$171,209.45
Power	$560.00	$0.00	$0.00
Minerals	$863.50	$422.75	$275.00
L&WCF Rec User Fee	$60,833.25	$55,625.75	$67,175.46
Grazing	$76,747.16	$86,783.93	$84,007.27
GRAND TOTAL	**$6,765,956.61**	**$6,244,543.50**	**$9,758,608.20**

The Forest Service pays 25 percent of the revenue it collects from timber sales, grazing recreation, minerals, and land uses to counties in which National Forest System lands are located. The funds are distributed in relationship to the number of National Forest acres in each county for schools and roads. Counties receiving these funds are as follows:

County	Acres	FY90	FY91	FY92
ADA	4,220	$2,689	$2,490	$3,887
BOISE	872,055	$557,204	$515,904	$803,248
ELMORE	637,934	$407,194	$377,013	$587,702
GEM	60,968	$39,056	$36,161	$56,157
VALLEY	1,073,92	$685,297	$634,503	$989,186
WASHINGTON	78	$50	$46	$72
TOTAL	**2,648,63**	**$1,691,490**	**$1,566,117**	**$2,440,252**

Miscellaneous Economic Information

Employment Information:			
	Permanent Employees	Temporary Employees	Total Employees
Mountain Home	19	13	32
Boise	18	8	26
Idaho City	30	47	77
Cascade	27	31	58
Lowman	31	45	76
Emmett	35	55	90
Lucky Peak Nursery	13	0	13
Supervisor's Office	103	26	129
Total	276	225	501

Economic Conditions:

Approximate annual conditions over the three year period (1990-1992).

Timber Program Support

Average of 102 MMbf harvest (enough wood to produce over 9,000 homes) which created approximately 1,200 jobs with estimated income of over $57 million per year.

Grazing Programs Support (Annual)	
Number of Sheep	23,000
Number of Cattle	30,000
Number of Permittees	70
Number of Active Allotments	80
Recreation Program Support (Annual)	
Recreation Visitor Days	210,000
Summer Homes	121
Resorts	4
Outfitters	13
Bogus Basin Ski Resort: (Annual)	
Skier Days	200,000
Estimated Revenue	3,500,000
Ski Season Employment	500

Special Use Permits Issued

Over 1,214 permits/year issued, these include communications sites, power lines, water lines, roads easements, etc.

Evaluation/Summary

All resource areas on the Boise National Forest suffer from a "shortfall" in funds allocated when compared to the funds needed to fully implement the Forest Plan. A large majority, over 50%, of the funds allocated to the Forest are timber related. The budget is often increased 20% to 30% by trust fund allocations and emergency fire fighting has played a huge role in the Forest funding in each year of our Forest Plan.

Conclusions

The management alternative selected in the Boise National Forest Plan was to emphasize "a balanced mix of market and nonmarket goods and services." This has not been realized in the budget allocation to the Forest in the first three years of Plan implementation. The Boise National Forest remains a predominately "timber forest" with historically over 50% of the budget allocated for timber related activities and timber support.

With forest health needs and "tight" budgets expected to continue in the future, the challenge to maximize the benefits to as many resources as possible through timber activities will continue.

Stand resilience management will require new approaches to planning, budgeting and financing. Wildlife, for example, can benefit from the habitat changes related to timber harvest. The concept of a more open stand structure will increase forage production that can change range potential, and reduced fuel hazards, as a result of resilience prescriptions can reduce wildfire suppression costs. Therefore, we should seek multiple resource funding for our forest health initiatives, and do the best job we can with the funds received to attain the "desired future conditions" of our management areas.

ID Team Recommendations

With allocations falling short of the objectives of the Forest Plan, "a balanced mix of market and non-market goods and services," the ID team recommends that the Forest prepare two budget submittals for Regional consideration 1) an ecosystem based budget (EBB) which may or may not meet allocation direction and 2) a budget which meets all directives associated with the allocations but also includes as much ecosystem based work as is concurrently possible within the anticipated allocation.

The ID team will develop and propose ecosystem areas (watershed based) for spatial identification of management practices. This ecosystem area would group a number of management areas from the Plan. The districts would submit their budget needs based on management practices within each ecosystem area. The objective would be to move the entire landscape toward a desired future condition.

Samples of Post Project Reviews 1990-1992

Newmont Mine/1990

North Fork Boise River/1991

Silviculture Prescriptions, Cascade District/ 1992

Post Project Reviews Scheduled for 1993

Our Forest Plan Monitoring Plan calls for post project reviews in all resource management areas. In addition, there are specific timber reviews called for related to silviculture prescriptions of sales greater than one million board feet. Following are 3 samples from 12 reviews that occured the first three years of implementation and a listing of reviews scheduled for 1993.

A Post Project Review From 1990

Reply to: 2540/2810 Date: October 26, 1990

Subject: Post Project Review Report, Newmont Mining Exploration

To: Forest Supervisor

On October 3 a post project review was conducted of mining exploration by Newmont Exploration. on the Mountain Home Ranger District. Exploration and mining have occurred in the Rocky Bar Area for over 100 years, and the project area reviewed lies within a National Register Historic Mining District. The following outline summarizes the chronology of gold exploration by the GEXA and Newmont Exploration Companies in the Wide West, Bear Creek, and Hardscrabble drainages.

Date Activity

8-85 GF.XA, Galli Exploration submit Plan of Operations for 4,000 feet of road construction and 3,600 feet of exploration trenching in the Wide West, Bear Creek drainages. Reclamation and stabilization work completed.

9-85 $2,500 Reclamation Bond posted. Bond is still active.

7-86 GEXA, Galli Exploration submit Plan of Operations for 1,800 feet of exploration trenching, one drill pad, and five drill holes. Reclamation and stabilization work completed.

6-87 Categorical Fxclusion and Decision Memo filed for GEXA, Galli Exploration 1987 Plan of Operations.

6-87 GF.XA, Galli Exploration submit Plan of Operations for 1,800 feet of road construction, 900 feet of clearing brush from existing roads, 17 drill pads, and 17 drill holes in the Wide West, Hardscrabble drainages. Reclamation and stabilization work completed.

7-88 GEXA, Galli Exploration submit Plan of Operations for 1,700 feet of road construction, 14 drill pads, and 14 drill holes in the Wide West, Bear Creek, and Hardscrabble drainages. Reclamation and stabilization work completed.

9-89 $4,000 Reclamation Bond deposited for 1989 Plan of Operations.

9-89 Newmont Exploration purchases claims from GF-XA, Galli. Newmont submits Plan of Operations for 7,000 feet of road construction, 19 drill pads, and

19 drill holes in the Wide West and Hardscrabble drainages. Reclamation completed in Wide West. No construction or drilling done in Hardscrabble as of 9-90.

6-90 Newmont Fxploration submits Plan of Operations for 21,000 feet of road construction, 40 drill pads, and 40 drill holes in the Wide West and Bear Creek drainages.

6-90 to Present Cultural Resource Investigation and report filed. Consultation with USFW Service concerning threatened and endangered species (wolf). Biological Evaluation completed. Categorical Exclusion and Decision Memo filed after public scoping and notification. $15,000 reclamation bond posted for the 1990 Plan of Operations.

Review participants included:

Mountain Home Ranger District:

Larry Tripp
Jesse Green
Hobe Essick
Steve Williams

Supervisor's Office:

Roberta Moltzen
Truman Puchbauer
Wayne Patton
Jack Gollaher
Bob Giles
Jim Curtis
Chuck Prentiss
Will Reed

Other Agencies:

Sharon Murray

Field Visit Highlights

District Ranger
District Engineer
Engineering Technician
Resource Assistant

Deputy Forest Supervisor Timber Officer
RWWR Officer
Fire and Lands Officer
Forest Planner
Forest Minerals Staff
Forest Soil Scientist
Forest Cultural Resource Staff
Minerals Tech. Idaho Dept. of Lands

Larry Tripp, Jesse Green and Hobe Essick provided an overview of the project after the review team arrived at the Wide West Area. The basic philosophy of the District towards mining exploration in this area is to mitigate sediment from roads and drill pads, so that no net impact occurs. This is achieved by closing roads, ripping and seeded, or recontouring and seeding roads, and drill pads.

The project area lies within the Rocky Bar Historic Mining District which is listed on the National Register. The disturbance needs to be monitored carefully to ensure cultural resources are protected. The need for monitoring by the Forest Archeologist was also acknowledged.

Featherville Management Area 7 includes the Rocky Bar, Wide West Area. The Desired Future Condition in the Forest Plan discusses rehabilitation of stre s impacted by past mining and road construction, and elk security areas.

Stop number 1

Approximately one mile of new road was reclaimed using a small track mounted excavator. The excavator pulled the fill material back onto the road surface so that the end result was a complete obliteration of the road prism. The natural contour of the slope was restored, and the surface was left rough so that grass seed would establish. Within a few years there would be little evidence of the road. No watershed impacts are expected from this reclamation practice, because the road was located away from streams, and an excellent job of recontouring was done. The small excavator is limited by its reach; it can pull material within 12 feet of the road. Road reclamation using this small excavator is about 1,000 feet per day and the cost including operator is estimated at about $8,000 per mile.

Stop number 2

The review team got a chance to see the small excavator reclaiming a road that was constructed through the plantation. The reclamation work looked excellent. On the back side of the ridge, another access road had been water barred and closed out. I asked the Newmont Representative if this road would be reclaimed (returned to original slope contours) if it was not needed to haul ore. He said they would be willing to do this if the road

was no longer needed. The damage to the plantation was minimal because the road was very narrow; there is no need to replant because the tree spacing is similar to older plantations that have been thinned.

Stop number 3

At the last stop, we looked at an abandoned mine shaft and adit. Fuel and a crawler tractor were also abandoned. The miner had not filed an operating plan, so the district sent a registered letter requiring him to immediately clean up the site, and submit an operating plan for review. Another problem was raised by Newmont. Newmont has filed claims with the BLM for this same area. The Forests' responsibility is to process the operating plan and not get involved in the question of whose claim it really is. Newmont and the other miner will have to resolve the claim dispute.

Commendations:

The on-the-ground reclamation of new roads is probably the best example on the Forest. The end results achieved will help meet the desired future condition for this management area. Much of the credit goes to Newmont Fxploration and the District field personnel.

The road closure strategy helped reduce the open road density. By promptly closing new roads, the public did not have expectations of leaving this access open. This strategy also is consistent with management direction in the Forest Plan.
The district strategy of "No Net Impact" proved feasible to implement. The common sense approach used by the District was also acceptable to the Minerals Exploration Company. It appeared that on-the-ground coordination has steadily improved each year.

The District did an excellent job of preparing for this review; Newmont had also prepared for the visit, and used excellent maps to display what had been accomplished during the last few years.

Problem areas:

The group discussed three opportunities for improvement: (1) NEPA Compliance, (2) Cumulative Impacts, and (3) Bonding.

NEPA Compliance - Some of the review team thought that road construction (5 to 7 miles) causes enough impacts to the watershed to require an environmental assessment instead of a categorical exclusion. Others thought that a categorical exclusion was best because it can be completed in a timely manner that responds to the mining operator's time frame; the District pointed out that a "no net impact" strategy makes it unnecessary to produce an environmental assessment.

One aspect of NEPA Compliance that should be examined is the environmental analysis.

Prior to making a decision (to approve an operating plan), an interdisciplinary environmental analysis must be completed, and adequately documented. Interdisciplinary analysis implies that resource specialists such as hydrologists, soil scientists, minerals technicians, and engineers participate. In this project area, the streams have been degraded by past activities; the goal listed in the Forest Plan for the Habitat Condition Index, is higher than the present condition. This implies that effort may be needed to improve the fish habitat. Will a "no net impact" improve the stream habitat or only be neutral? What other projects will be planned to improve the habitat if a "no net impact" alternative is chosen? How do we know the proposed activity will have no net impact to the watershed? These types of questions are best answered in an environmental analysis. Whether a categorical exclusion or environmental assessment is used, the analysis must be interdisciplinary, and must be documented. Ideally, projects in this management area would be planned to help achieve the desired future condition.

Cumulative Impacts

Newmont is doing an excellent job of coordination with cultural resource protection. Unfortunately, other smaller operations have not; patented claims offer little or no protection of cultural resources. The cumulative or total impacts to the cultural resources of this historic mining district need to examined. This appears to be a good opportunity for the Forest Archeologist to assist the Ranger District.

Bonding

The review team thought that bonding needs to be reviewed, because the road reclamation cost of $8,000 per mile times the number of miles needing reclamation is greater than the $15,000 bond currently active. The district explained that bonding will be reviewed each year; total road reclamation (re-contouring) is a relatively new practice that was not required last season. Therefore, next year's bond will probably be significantly higher assuming the same miles of roads are proposed for construction.

Recommendations

Tier all projects to the Forest Plan. This means all projects are well coordinated with goals outlined in the Plan. Conduct an interdisciplinary environmental analysis to see how the proposed project will help achieve the desired future conditions outlined in the Plan. If no alternatives improve the situation, plan other projects to help achieve the DFC. Utilize resource specialists in the planning and implementation of projects. Prioritize land disturbing activities such as road construction as high priority for resource specialist input.

ROBERT S. GILES
Forest Plan Implementation

cc:
DI
FS
DFS
Murray (Idaho Department of Lands)

RGiles:gd

A Post Project Review From 1991

Subject: '91 Project Review @ Idaho City Ranger District 9/20/91

To: Forest Supervisor By: District Ranger Kathleen Lucich

The 1991 project field review at Idaho City took place on September 12, 1991. The subject of the review was roading on the North Fork Boise River (NFBR). A list of attendees, including District and SO staff, Idaho State Legislators, and representatives from the Idaho Department of Lands and Division of Environmental Quality, is enclosed.

The selection of road maintenance in the drainage was based on interest generated by the nomination of the NFBR as a State of Idaho Stream Segment of Concern. The State of Idaho formed a local working committee last summer to identify site-specific Best Management Practices (BMP's) and the State Department of Lands just recently approved these BMP's. The purpose of our field review was to highlight the BMP's, review progress made in implementation, and explore our strategy for the future.

This field review was preceded by three earlier field trips involving various combinations of personnel including myself Zone Engineer and engineering assistant staff, Shared Service Hydrologist, District Resources Staff, Forest Engineer, Assistant Forest Engineer, Forest Road Crew Foreman, and Road Crew. The first of these trips occurred in early summer, prior to road crew maintenance for the year. Watershed concerns were discussed with the road crew foreman and his crew at that time. A followup field session occurred during maintenance, again with the road crew present. Most recently, the new Zone Engineer was introduced to on-the-ground NFBR watershed/roading concerns in preparation for this annual project review.

Our formal review began with a 1-hour office overview of BMP's, road system management, associated timber harvest, and the ongoing road obliteration program.

Approved Stream Segment of Concern BMP's consist of the following:

1. Inventory specific sites where corrective measures would have the most effect, and implement repairs as soon as possible.

2. Continue the road obliteration program, with priorities to be determined by the inventory.

3. Expend additional efforts to stabilize road/streams intercepts.

4. Begin modifications as soon as possible to reduce sediment from streamside roads.

Zone Engineer Mark Beaulieu identified our general strategy of focusing on these parallel roads and road/stream intercepts, including a proposal that roads paralleling streams be maintained at a minimum of Level II maintenance to assure appropriate sediment reduction. Maintenance standards were described, with the relationship drawn between intensity of use, maintenance action, and expenditure of funds.

Past extensive tractor/jammer logging methods in the NFBR drainage has resulted in high density roading. Discussions on future logging focused on the move toward aerial cable or helicopter logging, with significantly fewer new road construction needs. Also obviously, reconstruction of existing roads for future use will contribute significantly less sediment than the new construction has in the past.

Field Review

Sites selected for inspection and discussion were oriented around the four Stream Segment of Concern BMP's.

Beaver Creek culvert on FR 384/strategy to reduce road-related sedimentation in the NFBR watershed. Review at this location focused on techniques for sediment reduction, including resurfacing, application of surface dust abatement treatments such as magnesium chloride, road template changes, drainage improvements, cut/fill stabilization, and obliteration. Options for funding of such changes were also reviewed. Utilizing K-V timber sale dollars for obliteration was discussed. Beyond timber sale boundaries, our need for integrated planning to address associated watershed, visual, F/W, and recreation problems was identified, including the need for increased partnership development. We discussed the difficulty of competing for hard money Congressional appropriations, and concluded that the key is to visibly elevate concerns.

Little Owl Creek summit "amphitheatre" (FR 384)/funding priorities. Road construction occurred on the site 10-15 years ago. As a consequence of an error in road design, the road bed stopped abruptly. A switchback currently consists of a partially benched road portion approximately 100 yards in length and 50 yards in height. Major slippage has occurred in the center of the road and traffic patterns, along with poor drainage, continue to contribute to an eroding base. Options for rehabilitation range from low-tech, low-cost efforts to place fill material at the base (for vegetation re-establishment) and properly direct drainage, to high tech, high-cost terracing and gabion placement. The need to more accurately determine significant sediment contributors to the river was identified. Consensus opinion pointed to a concern about focusing on visual eye-sores at the expense of correcting smaller, but perhaps more significant, sediment producers. The lack of sufficient dollars to correct all problems was recognized, as well as a need for a comprehensive inventory program to identify the greatest problems.

Bottom of the Little Owl road/template changes that had been made at the intersection of the Little Owl/NFBR roads. Up until this spring, water had funneled down the Little Owl ditch and across the NFBR road, pooling up at the intersection or flowing directly into the NFBR. Forest road maintenance crew added gravel to inslope the intersection and angle drainage away from the NFBR. A future need to contain this drainage (sediment filtering) prior to it entering Little Owl Creek was noted. Several examples of diagonal relief ditching to direct small quantities of water across and off the road bed were inspected. Also, we were able to see the benefits of stopping the practice of indiscriminate blading all ditches in order to minimize unnecessary disturbance to sediment-trapping vegetation and rocks.

Trapper Creek road (FR 345)/observation of several unusual techniques to minimize sedimentation. The road portion observed was an unusually steep section (18 percent) that had originally been paved and contained open drainage culverts. Concentrated runoff had eroded a cut slope and caused substantial ditching through side-cast fill down to the NFBR. To remedy the situation, Jersey barriers skirting the cut slope and elephant trunk extensions on culvert outlets were installed. Both techniques had been effective and proved to be well worth the investment.

Obliterated road section that parallels Big Owl Creek at its intersection with the NFBR road/observed obliteration techniques, consisting of: ripping to a depth of approximately 9"; removing perennial stream culverts; directing drainage at intermittent crossings; retaining existing, vegetated berms; seeding; and fertilizing. The broken surface of the ripped road was clearly encouraging a growing stand of grass and other vegetation. Sediment transport had been checked by these obliteration techniques.

A stop approximately 1 mile north of Barber Flats Guard Station/ opportunities for nonroad related watershed improvements were identified. The road and river abut at this point, and the slope between the two is unraveling. Riprap was used to line a similar embankment just upstream of this segment, and was identified as the best solution to stop the undercutting of this slope by the river. Also discussed were stream inventory strategies. Hydrologists and engineers developed a prototype stream inventory form earlier in the summer. It was recently utilized by the Forest engineers to inventory NFBR road segments that parallel the NFBR. It was determined that future assessments will be conducted jointly by engineers and hydrologists. Steve Bauer, DEQ representative indicated that the State inventory was significantly more intensive, and intended for use with computer modeling. John Potyondy, Forest Hydrologist, acknowledged the reduced complexity of our survey, concluding that we would focus on determining the amount of information necessary to allow reasonable prioritization of problem areas.

Final stop was Black Rock Campground/only developed recreational site on the NFBR. Discussed opportunities to utilize road slough for site development, and our overall need to identify long-term slough disposal plans. Also discussed the effects of dispersed recreation on the river, a growing watershed concern. Over use of the developed site and dispersed recreation are currently resulting in sediment contribution to the river and has the potential to intensify with expected increases use.

Other relevant subjects discussed during the review included:

1. Idaho Department of Fish and Game's (IDFG) strong preference for road closures to control hunter access. Road obliteration for sediment control coincidentally helps achieve this IDFG objective.

2. Recognizing that the State Forestry Antidegradation Regulations do not apply to most of the primary NFBR road system. Much of this system only incidentally accommodates logging traffic.

3. Acknowledgement that the State Stream Segment of Concern program with having provided the impetus to the Forest to highlight watershed concerns.

Summary and Overall Review Evaluation

The overall tone of the review was positive. I believe that all participants have a better appreciation of watershed concerns, and commitment to implement change. The District will hopefully complete road inventory documentation on streamside roads within the NFBR drainage in the 1992 field season. The timber sale road obliteration started on the District several years ago is going strong. It is our intent to expand the scope of the program to also address non-timber sale roads. The District purchased seeding equipment that will assist in the stabilization of road/stream intercepts, cut/fill slopes, and road obliterations. It is obvious that we can make a significant difference on the ground next year by simply applying seed and fertilizer to bare ground in areas with an obvious needs. Finally, road design and maintenance modifications will be ongoing, as outlined in the strategy developed by District Engineer Mark Beaulieu. A good part of the road maintenance modifications will be accomplished by the Forest Road Crew.

We hope to accomplish much of this change as part of our normal workload. We will make a strong effort at integrated planning to assure a logical flow of work. We may also need an infusion of road dollars that exceed typical appropriations, and will be seeking out-year assistance in acquiring adequate funding.

Attendees

Forest Service

Roberta Moltzen	Deputy Forest Supervisor
Rich Christensen	Forest Engineer
Jerry Firth	Forest Road Crew Foreman
John Potyondy	Forest Hydrologist
Lyn Morelan	Forest Timber Planner
Kathy Lucich	District Ranger
Mark Beaulieu	Zone Engineer
John Thornton	Zone Hydrologist
Greg Lesch	Zone Hydrologist
Terry Sexon	Timber Management Assist.
Ron Haag	Director of Watershead R1

Idaho State Legislature

John Hanse	State Senator/Idaho Falls
Ralph Peters	
Ken Rebison	State Rep./Dist 19, Boise
Mike Nugent	Legislative Bills

Idaho State Department of Lands

John Roberts — Forest Practices Advisor

IDFW-Division of Environmental Quality

Steve Bauer

A Post Project Review From 1992

Reply to: 2470/1920 Date: November 24, 1992

Subject: Site Visit/Forest Plan Monitoring - Silvicultural Prescriptions

To: District Ranger, Cascade RD

I visited the District on November 9 to review Dave Marben's silvicultural prescriptions and to find out how the District is addressing biodiversity and ecosystem management in the new projects it is undertaking.

Dave and I first discussed North Gold TS. The EA and most of the project planning was done before biodiversity and ecosystem management were priorities. Dave told me they felt leaving more fuels after harvest, doing lighter burns for site preparation, and leaving one large Douglas-fir or ponderosa pine per 10 acres were considered New Perspective actions. Presently, this would not be considered sufficient to accomplish either biodiversity or ecosystem management goals. However, the prescription for unit 10 of the sale provides some biodiversity within the area.

Next, we discussed the Spruce Creek EIS where it appears that District personnel are aggressively dealing with the two issues. The first item Dave mentioned was wildlife wanted to retain the presently existing block of old-growth and to increase the number of old-growth blocks greater than 300 acres. I am encouraged that you are working with wildlife to achieve this. I also feel that in going along with our goal of mimicking natural events, we should be able to intensively manage equally large blocks for timber management. Managing the forest in larger blocks reduces the overall fracturing of the forest ("measle effect"), limits the amount of edge, and increases the amount of interior habitat for those species which need this type of habitat and the security it provides them to successfully reproduce.

Another desire of wildlife is that we leave groups of snags and surrounding green trees instead of scattered snags throughout the stand. I feel we can do this with minimal effects on the silviculture of the stand and its growth.

Some prescriptions using the shelterwood regeneration method will leave 20-30 trees/ acre and leave them as relics within the stand. Once again, this will achieve vertical biodiversity, as well as provide a more pleasing visual product for the public. Caution must be taken to balance the amount of space taken up by relics with that given to the renewed stand. We do want to maintain a decent amount of growth within the stand, even if it is not the maximum possible.

Dave and I discussed what to do with GF stands that have been heavily defoliated by DF tussock moth, have dead tops, and are infected with Indian paint fungus. We both agree it is necessary to clearcut these stands and regenerate them, planting the seral species which occur in the area. Ponderosa pine and western larch are favored where they occur, then Douglas-fir. Two to 10 reserve trees per acre should be left favoring the seral species firsr-, and then overmature, cull grand fir to provide for the visual resource and future snag potential.

We spoke about the trip you sponsored with the BCC foresters and their suggestion to do a little management over every acre in the GF zone. I do not believe this philosophy would allow us to achieve our biodiversity and ecosystem management objectives. They take the seral species and the largest of the GF first, leaving a few codominant and intermediate trees for later entries. I feel this is a delay, sooner or later they end up clearcutting the areas and planting the stand.

Gold Fork TS, Unit 10

This unit is positioned between two clearcuts from previous timber sales. It is a corridor for elk travel and provides hiding and thermal cover. If a shelterwood regeneration cut were completed, there would be so much damage to the stand that the corridor would be destroyed and an opening exceeding Regional standards would result.

Dave wrote a prescription to use uneven-age management for this stand. In writing his prescriptions, Dave assumes that one-fourth to one-third of the leave trees will be damaged and removed and allows for that in the marking. The prescription calls to harvest a portion of the overmature PP and DF while leaving a portion, especially where there are groups of overmature trees and along FR 402. In addition, the groups of DF poles and small sawtimber will be thinned to maintain vigor and growth. The result of this harvest is small openings will be produced and regeneration expected, overmature trees will be maintained, and young trees and saplings will be thinned to maintain growth.

I feel this is an excellent prescription for the stand. One criticism I have is Dave does not discuss any post-harvest activities. He says you cannot tell what will be left until harvest is complete. I agree with this but the idea of a prescription is to look into the future, decide what will happen theoretically, and prescribe activities accordingly. This is also a public document and background material for environmental documents and should contain the needed treatments for stand management.

Recommendation

Dave include needed post-harvest activities for the current prescribed treatment in the prescription.

The prescription and marking instructions were well done for this stand. Dave also spent a day with the crew explaining the prescription and the marking instructions. After walking through the stand, Dave and I agreed it was not marked according to the prescription. It appeared to me when given the choice of two overmature pines, the crew would remove the larger, better form tree, and leave the poorer. Dave told me this was marked 2 years ago with a green crew. He will remark the stand this coming field season, and last summer's crew did better quality work. I feel the crew was hunting volume when they marked this unit and did not understand the underlying reasons for leaving the overmature trees.

Recommendation

The District re-mark the stand and fulfill the prescription. During training, the District emphasize the stated Forest objective that we are managing stands for forest health and resilience and removing the volume associated with appropriate management. We are not trying to get the greatest volume possible out of a timber stand.

I discovered incorrectly marked stands on several other Districts. The prescription is well written and achieves the desired objectives, but the marking does not carry out the prescription. This is an area where Total Quality Management is critical to our reputation with the public and quality must be improved.

Recommendation

At the beginning of each field season, I encourage everyone involved with marking timber to take the time to explain the objectives and specifics of prescriptions. Immediately after the crew is finished marking the stand, conduct a walk-through review. Doing several of these reviews at the beginning of marking, and then 2 weeks later will show the overall quality of the crew, who specifically has problems, and allows for correcting habits and false impressions of what is expected by and from the markers.

Nowhere in the prescription is a description of the desired future condition of the stand. This is a critical item in any prescription as it describes the condition of the stand 80-100 years from now, and accordingly sets the objectives you are trying to achieve with the prescription. While talking with Dave, I realized one of his objectives was to end up with pure clumps of PP and DF interspersed throughout the stand. I never suspected this was one of the objectives from the existing prescription. This end result could easily be described in the desired future condition of the stand.

Recommendation

Dave include a short paragraph describing the desired future condition of each stand for which he writes a silvicultural prescription. The Region issued a recent amendment to Chapter 8.3 of the Silvicultural Practices Handbook (2409.17) with a lot of detail concerning required information of a prescription (R4 Supplement 2409.17-92-1 effective 9/18/92). Dave should review this supplement to see what is now required in all prescriptions.

Gold Fork TS, Unit 11

Dave plans a combination overstory removal and commercial thin in this stand with a post-harvest treatment to release and weed the understory. He is creating a 2-story stand. I was concerned about spruce budworm and Douglas-fir tussock moth destroying the stand before the planned final harvest. Dave is not concerned because the tussock moth is historically not a problem in this area. Also, stocking density control will be achieved with two commercial thins planned in 2035 and 2075 which will minimize susceptibilir-y to budworm. A shelterwood regeneration harvest will be done in 2095 leaving one-third PP and two-thirds DF. Dave plans to plant 50 percent PP and DF.

Gold Fork TS, Unit 14

Dave plans to clearcut this stand leaving a few cull PP and DF per acre for wildlife. The stand was previously harvested and there are not enough good quality mature trees left to do anything but clearcut. This is a highly productive site and should be treated. Dave plans to plant DF at a 9 X 9 spacing.

I was curious as to why Dave did not want to plant any PP. Dave feels the PP will snowbend if planted on this site. I recently heard some doubt expressed concerning Steele's findings on snowbend on the Forest. Some people feel the bending is due to offsite planting and not to snow damage. Dave said he has seen many cases on the District of snow damage to naturally regenerated saplings that followed Steele's findings. He feels that on West Mountain approximately three-fourths of the PP will be severely damaged, but in Cold Fork only one-fourth of the PP will be damaged.

Recommendation

I feel we must maintain the seral species in our stands to achieve our forest health and diversity objectives. I recommend Dave include PP in the planting in this area. If necessary, he should increase the trees/acre planted. Once the trees do grow to 10-15 feet, he can remove the damaged trees with a precommercial thin/weeding and the resulting stand will still be fully stocked.

Dave does not state what he feels would be a successful regeneration effort.

Dave describe the minimal stocking he feels would achieve his stand objectives. A sample description would state that "X" trees/acre over "Y" percent of the stand after 3 years will be sufficient stocking to fulfill the stand objectives and allow certification of the stand. With this description, the stand can either be certified or the District has timely notification that replanting will have to be done to achieve a stocked stand.

I reviewed these prescriptions and compared them to the goals and objectives and management standards and guidelines for the management area in the Forest Plan. I also inspected them for compliance with the EA and found that they do not prescribe any activity which is not allowed for in either document.

Summation

Dave is doing a good job of writing prescriptions for the District program. He is including ecosystem management and biodiversity issues in them to the extent that anyone is presently able to. His knowledge of the District is extensive, and I appreciate his sharing that with me and other silviculturists on the Forest. I hope Dave actively participates in future Forest and Regional meetings and relates his knowledge to us. Dave should review the new Regional supplement and add the needed details to his future prescriptions. I also encourage Dave to attend the 2-week course on ecosystem management this June.

/s/Barry F. Stern

BARRY F. STERN
Forest Silviculturist

cc:
T.Puchbauer J.Lancaster
B.Stern

Post Project Reviews Sechedule for 1993

PROJECT NAME	SCHEDULED DATE	STAFF SPECIALISTS REQUESTED
Far East Salvage Sale	7/14	J.Thornton, C.Prentiss, T.Puchbauer, D.Schlender, R.Gunn, J.Gollaher, P.Bryant
Enduro Race Area	9/8	J.Thornton, C.Prentiss, T.Burton, W.Reed, V.Lawson R.Gunn, P.Bryant, S.Paris
Cotton Pine Timber Sale	8/25	J.Thornton, C.Prentiss, L.Morelan, B.Stern, T.Puchbauer, D.Schlender, J.Gollaher, R.Gunn
Foothills Fire Monitoring	1/93	As required.

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